

2

10.11.14	const.	= 4.6855749
83.2	1183.720	2.6845940
100.73	170880	8.2026912
311	<u>400.38</u>	2.6028601
33		
30	30.22.31	0.1226008
6	<u>30</u>	1.4771213
44	40.712	1.6097221
10.8	54.22.31	9.9625097
11	<u>30</u>	1.4771213
27.1	27.022	1.4396810

21.628	co. 39.01	0.1095997
4.587	20	1.4771213
17.261	38.672	1.5867210
	5.39.01	9.9086276
	30	1.4771213
240.712	24.308	1.3857488
6.786		
657.206	co. 42.35	0.1326008
663.991	484.245	2.4851010
86.585	657.206	5.8177018
77.263		

663.991	5.45% 31.00	9.9625877
73.95	54.25%	2.0851010
<u>590.041</u>	<u>444.284</u>	<u>2.6476607</u>
35.334		
554.707	6.8% 27.00	0.8328414
350.886	5.47% 16.00	9.8673992
<u>905.593</u>	<u>17.261</u>	<u>1.2370660</u>

$$\begin{array}{r} 100 \\ 71.755 \\ \hline 28.245 \\ 90.578 \\ 58.212 \\ \hline 317.351 \\ 70.378 \\ 17.381 \\ \hline 387.739 \end{array}$$

$$\begin{array}{r}
 86.578 \\
 \underline{51.631} \\
 64.927 \\
 38.320 \\
 \underline{29.693} \\
 12.234 \\
 \underline{17.354} \\
 138.494
 \end{array}$$

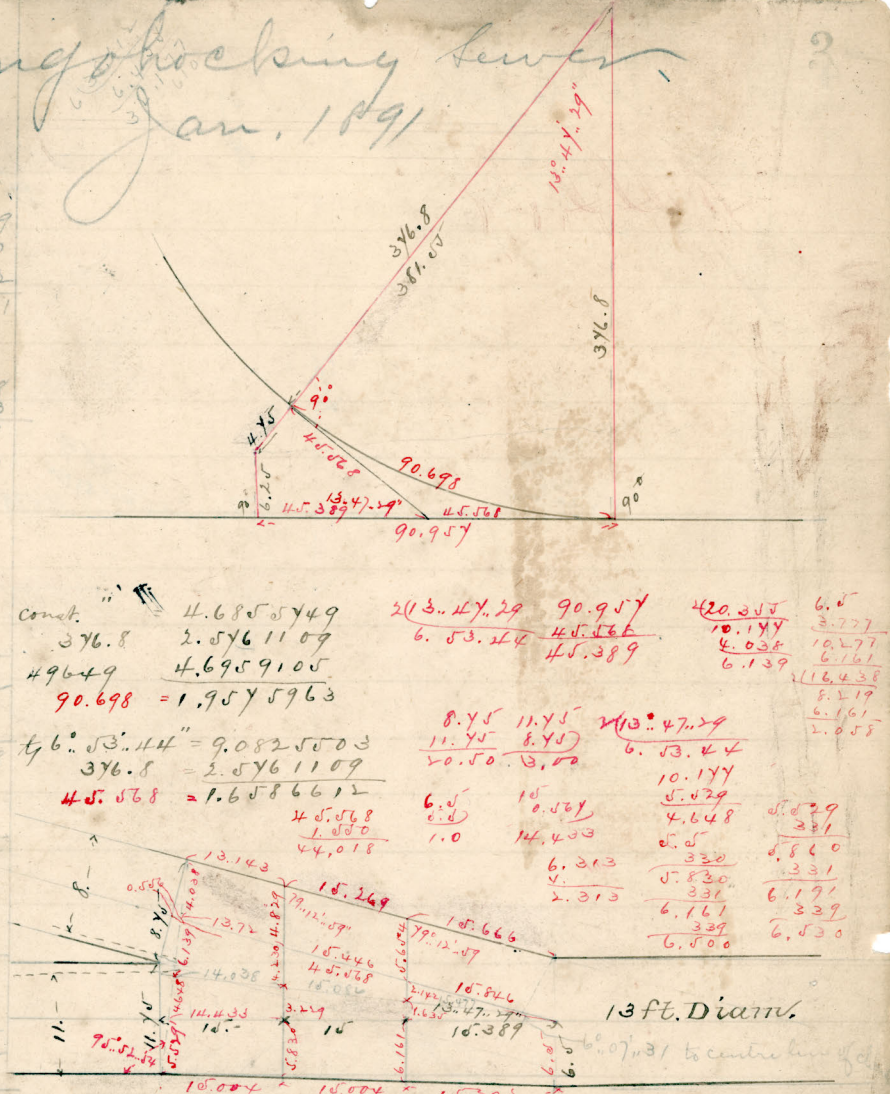
$$\begin{array}{r}
 54^{\circ} 13' 30'' \\
 \underline{478.300} \\
 35.324 \\
 \hline
 1.5481927
 \end{array}$$


$$\begin{array}{r}
 \text{const } 00' \\
 478.3' \\
 507' \\
 \hline
 70.578
 \end{array}$$

$$\begin{array}{r}
 8.8684923 \\
 \underline{2.6797004} \\
 2.7050080 \\
 \hline
 1.8474345
 \end{array}$$

35.4289
 370.05
 90.957
 $C. 3^{\circ} 12'$
 14.018

9.5899882
 1.5685462
 1.9688850
 0.0005987
 1.6436303
 16.442290



Const. $\frac{1}{2}$ 

376.8	4.6855449
49649	2.5461109
90.698	<u>4.6959105</u>
	= 1.9575963

$$\begin{aligned} 45.5768 &= 9.0825503 \\ 376.8 &= 2.5761109 \\ 45.5768 &= 1.6586612 \end{aligned}$$

$20.00 = 8.6882461$
 $3.00 = 0.4441213$
 $5.6\% \text{ } 33.44'' = 9.0825503$
 $19.00..50'' = 8.2479177$
 $7\% \text{ } 54.34$
 $17\% \text{ } 54$

$\cos. Y^{\circ} \Delta H'' \Delta L'' = 0.0041513$
 $H = 0.6020600$
 $4.0384 = 0.6062113$
 $\sin. Y^{\circ} \Delta H'' \Delta L'' = 9.1424942$
 $H = 0.6020600$

$1.55572 = 9.7448542$
 $45.389 = 8.3431451$
 $1. - = 00000000$
 $1.1545 = 8.3431451$

$15.389 = \frac{1.1842104}{1.1873158}$
 $15.389 = 8.24314$
 $15.389 = \frac{1.1842104}{0.251}$

$c. 13^{\circ} 47' 29'' = 0.0127047$

$\sqrt{1.1767913}$

$105.446 = 1.1887960$

$5.15^{\circ} 47' 29'' = 9.9872903$

$10'' = 1.1760913$
 $= 1.16338.66$
 $5.13^{\circ} 47' 29'' = 9.3899882$
 $\frac{10''}{3600} = 1.1760913$
 $3.6820 = 0.5660795$

$44.018 = 8.3563694$
 $2.313 = 0.3641456$
 $39.00:28 = 8.7205453$
 $5.49^{\circ}12'59'' = 0.0094378$
 $5.46^{\circ}12'31'' = 9.9872953$

$10.546 = 1.199\ 91\ 51$
 $10.666 = 1.194\ 94\ 82$
 $5.499\ 12\ 59 = 0.00\ 44\ 34\ 8$
 $5.3.00\ 12 = 8.719\ 9\ 226$
 $10.546\ 1.199\ 91\ 51$

Historical
book, 1891.

$$\begin{array}{r} 213.14729 \\ \underline{6.5314} \\ 90.957 \\ \underline{45.566} \\ 45.389 \end{array}$$

$$\begin{array}{r} 11.45 \\ 20.50 \end{array} \quad \begin{array}{r} 8.45 \\ 3.52 \end{array} \quad \begin{array}{r} 10.50 \\ 6.53 \end{array} \quad \begin{array}{r} 1.55 \\ 10.14 \\ 5.52 \\ 4.648 \\ 2.5 \\ 330 \end{array}$$

C. $\delta^0 \cdot \delta^2$, "H" = 0.002 2923
 $\delta^1 \cdot \delta^1$ = 0.440 6624
 $\delta^0 \cdot \delta^2$ = 0.443 6550

f. $\delta^0 \cdot \delta^2$, "H" = 9.012 9071
 $\delta^1 \cdot \delta^1$ = 0.440 6624
 $\delta^0 \cdot \delta^2$ = 9.45 2698

$S. \text{ } 2^{\circ} 02' 24'' = 0.9893803$

$S. 13^{\circ} 04' 29'' = 9.3472835$

$8.45 = 0.742081$

$20.305 = 1.3086769$

$\cos 10^{\circ} 15' 45'' = 0.00010524$
 $15 = 1.1760913$
 $15.00x = 1.1761967$
 $5.10^{\circ} 15' 45'' = 8.3431451$
 $15 = 1.1760913$

$$\begin{array}{r} .330055 = 9.5192364 \\ \text{Co. } 13^{\circ} 47' 29'' = 0.0124047 \\ 15.389 = 1.1872104 \\ 15.846 = 1.1799151 \end{array}$$

$5.13 \cdot 47.29 = 9.9872953$ 3.682
 $10.39 = 1.1872104$ 5.532
 $14.945 = 1.1745059$ 8.115
 $5.13 \cdot 47.29 = 9.9899882$ 7.607
 $10.39 = 1.1872104$ 4.529
 $14.945 = 1.1745059$ 4.520

$$\begin{array}{r} 1.589 = 1.1172107 \\ \cdot 3.7774 = 0.5771986 \\ \hline \text{C. } 13.947129 = 9.9872953 \\ 6.5 = 0.8129124 \\ 6.3126 = 0.802087 \end{array}$$

$5.130^{\circ}12'39''$
 1.5495
 9.0899882
 $= 0.1701769$

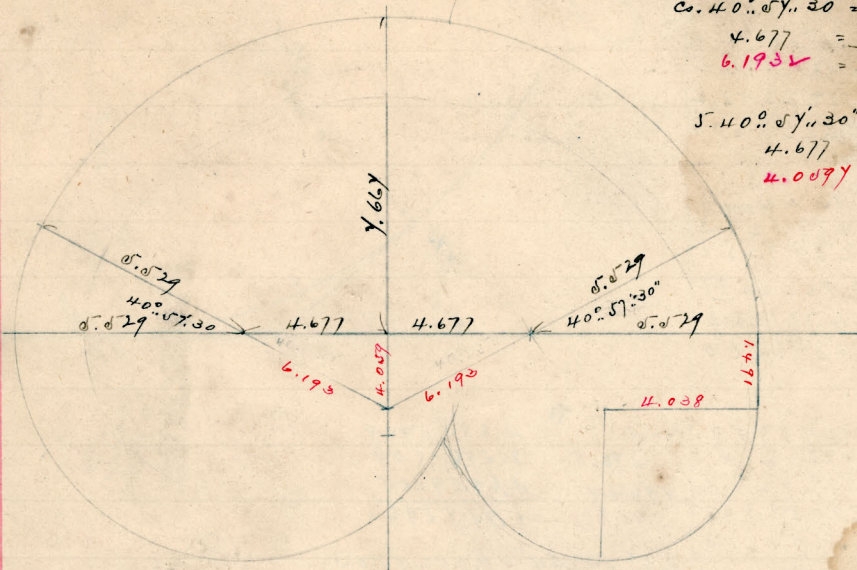
$1.15.446 = 1.1884960$
 $15.269 = 1.1838291$
 $3.49.12.17 = 0.0045378$
 $3.2.00.28 = 8.7193236$
 $15.846 = 1.1884960$
 $2.14 = 2.14$

#42

Wingohocking Sewer January 1891

$$\begin{aligned} \cos 40^{\circ} 57' 30'' &= 0.1219458 \\ 4.677 &= 0.6699674 \\ 6.193 &= 0.8919132 \end{aligned}$$

$$\begin{aligned} \sin 40^{\circ} 57' 30'' &= 0.6699674 \\ 4.677 &= 0.6699674 \\ 4.009 &= 0.6084925 \end{aligned}$$



$$\begin{aligned} \text{ty. } 39^{\circ} 01' &= 0.0913725 \\ 1298.383 &= 3.1134028 \\ 1306.775 &= 3.5047753 \\ \cos 39^{\circ} 01' &= 0.1095997 \\ 2062.410 &= 3.3143750 \end{aligned}$$

$$\begin{aligned} \sin 1^{\circ} 43' &= 1.5235016 \\ \sin 39^{\circ} 01' &= 9.7990278 \\ 33.4 &= 1.5237465 \\ 701.899 &= 2.8462759 \end{aligned}$$

$$\begin{aligned} \sin 1^{\circ} 43' &= 1.5235016 \\ \sin 37^{\circ} 18' &= 9.7824643 \\ 33.4 &= 1.5237465 \\ 675.635 &= 2.8297124 \end{aligned}$$

$$\begin{aligned} \cos 02^{\circ} 42' &= 0.2175357 \\ 445.667 &= 2.6490134 \\ 735.443 &= 2.8665491 \end{aligned}$$

$$\begin{aligned} 2062.410 \\ 675.635 \\ 1306.775 \\ 60.727 \\ 1326.048 \\ 701.899 \\ 2027.947 \end{aligned}$$

$$\begin{aligned} 6326.548 \\ 701.899 \\ 7027.947 \\ 644.391 \\ 7672.338 \\ 39.381 \\ 7632.957 \end{aligned}$$

End of 18 ft. sewer = 7632.957

5



2 (40, 37, 45)
20, 18, 32

$$\begin{array}{r} 87.237 \\ 25- \\ \hline 21.741 \\ \hline 108.978 \end{array}$$

$$\begin{array}{r} 205.753 \\ 74.017 \\ \hline 131.736 \\ 17.129 \\ \hline 148.865 \\ 7.293 \\ \hline 141.572 \end{array}$$

Const. = 4.6855749
200 = 2.3010300

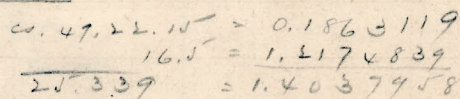
$$\begin{array}{r} 146265'' = 5.1651404 \\ 141.822 = 2.1517453 \\ \hline 86 \\ 53.822 \end{array}$$

$$\begin{array}{r} 878.020 \\ 525 \\ \hline 353.020 \end{array}$$

$5.40.37.45''$
 8.5

$$\begin{array}{r} 9.9334807 \\ 0.9294107 \\ \hline 0.8628996 = 7.2929 \end{array}$$

East side of 19th St.



5. 40, 37, 45 = 9 9 3 3 4 8 0 7
1023, 349 = 3 0 1 0 0 2 3 8

$$J_{140.37} \times \sqrt{e} = 0.0665193 \quad \underline{2.9435046} = 878.020$$

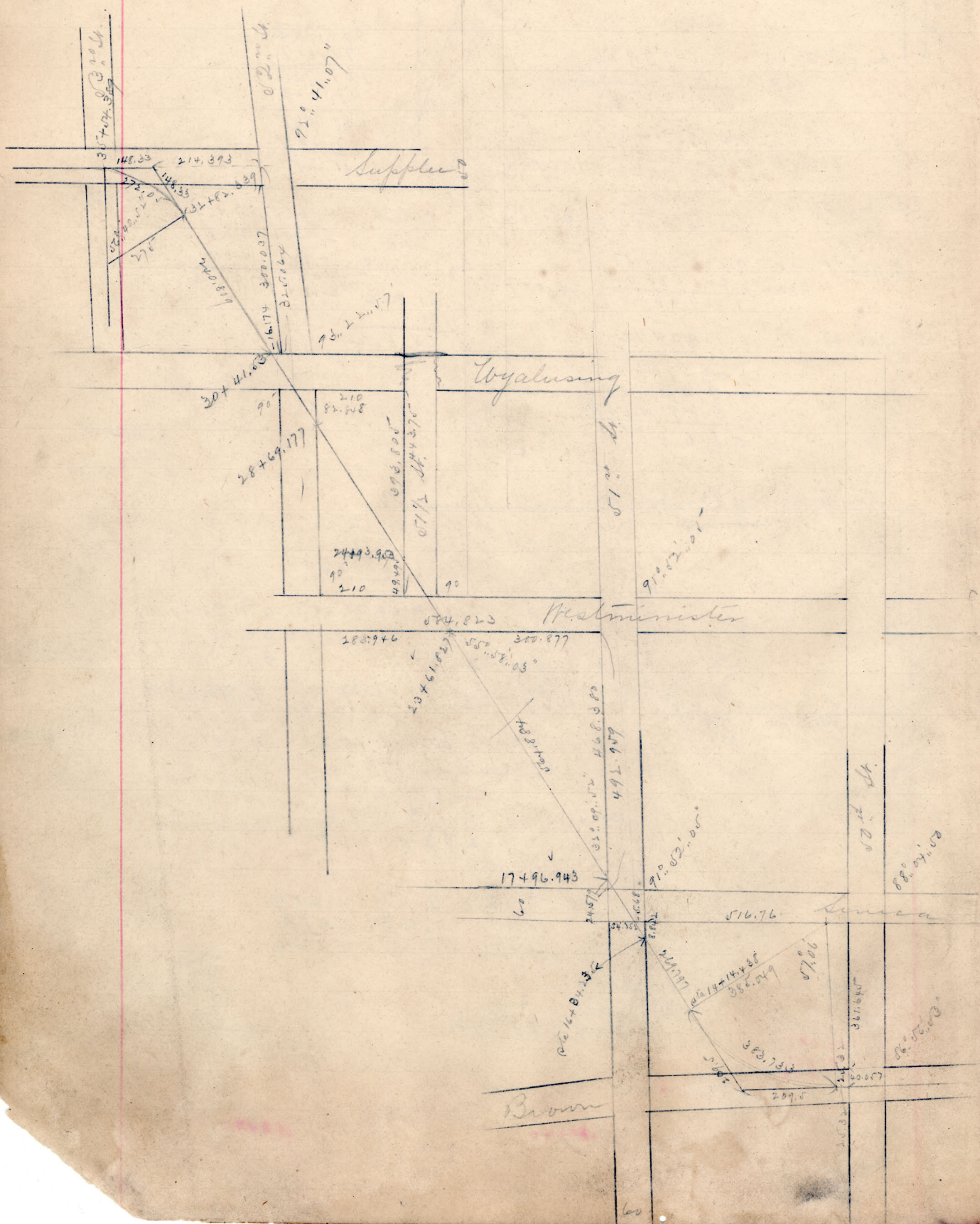
$$\text{Col. 40. } 37.45 \frac{0.1197926}{2,7341112} = 272.140$$

$\begin{array}{r} 411.252 \\ 15.525 \\ \hline 356.924 \end{array}$

$$\begin{array}{r} 542.100 \\ 57.525 \\ \hline 597.665 \\ 1,348.393 \\ \hline 750.724 \\ 38.393 \\ \hline 789.118 \\ 74.017 \\ \hline 715.101 \\ 53.822 \\ \hline 768.923 \\ 106.366 \\ \hline 875.289 \end{array}$$

$$146265 - \frac{5,1651304}{106.386} = 2,0267966$$

for Chamber see page 10-



$0.00, 0.00, 0.07 = 0.0006164$ $40, 1.6020600$ $40.007, 1.6026764$	361.645 40.007 401.702 330.738 737.440	209.5 55.32 234.82 522.440 516.76 5.68	$5.24, 0.01, 0.07 = 0.1704813$ $33.426 = 1.0340844$ $49.495 = 1.6945657$ $Co. 24, 0.01, 0.07 = 0.0815920$ $59.725 = 1.7761577$
$5.35, 0.07, 0.07 = 0.1312831$ $5.86, 0.07, 0.07 = 9.9993836$ $234.82 = 5.3707351$ $399.394 = 2.6014018$ $5.35, 0.07, 0.07 = 0.1312831$ $5.57, 0.07 = 9.9240827$ $134.82 = 2.3707351$ $330.738 = 2.5260009$	10.664 209.5 399.394 619.558 889.355 269.797 383.733 653.550 1030.705 1684.235 269.797 1414.438 1684.235 102.044 1786.279 2351.163 72.401 87.725 2483.289 370.224 2888.613 99.972 72.401 3030.886	60.032 5.68 54.351 60.032 84.611 24.579 492.959 24.579 468.380 1786.279 564.854 2351.163 874.823 300.877 283.946 40.02 243.026 210 33.426 443.750 49.095 394.255 260.95 210 55.95 470.196 99.972 370.224 2483.289 10.664 3493.953 3030.866 10.664 3041.530 300.037 25.027 325.064 26.293 551.357	$Co. 24, 0.01, 0.07 = 0.0815920$ $393.805 = 2.5952812$ $475.196 = 2.6768732$ $5.24, 0.01, 0.07 = 9.8295187$ $393.805 = 2.5952812$ $265.917 = 2.4247999$ $5.24, 0.01, 0.07 = 0.1704813$ $55.95 = 1.7475001$ $82.848 = 1.9182814$ $Co. 24, 0.01, 0.07 = 0.0815920$ $99.972 = 1.9998734$ $Co. 24, 0.01, 0.07 = 0.0004771$ $25 = 1.3979400$ $25.027 = 1.3984171$ $5.30, 0.39 = 0.2926067$ $5.93, 22, 0.07 = 9.9992428$ $16.174 = 1.2088174$ $30.952 = 1.4906669$ $5.30, 0.39 = 0.2926067$ $5.55, 0.07, 0.03 = 9.9184080$ $16.174 = 1.2088174$ $26.293 = 1.4198321$ $5.56, 0.39, 0.03 = 0.0780695$ $5.92, 41, 0.07 = 9.9995229$ $30.952 = 2.15457486$ $420.859 = 2.16233410$ $5.56, 0.39, 0.03 = 0.0780695$ $5.30, 0.39 = 9.7073933$ $30.952 = 2.15457486$ $214.393 = 2.3312114$
$5.55, 0.07, 0.03 = 0.0815920$ $5.88, 0.07, 0.03 = 9.9997691$ $737.44 = 2.8677267$ $889.355 = 2.9490750$ $5.55, 0.07, 0.03 = 0.0815920$ $5.35, 0.07, 0.07 = 9.7687169$ $737.44 = 2.8677267$ $822.440 = 2.7180356$ $5.32, 0.09, 0.02 = 0.2438019$ $5.88, 0.07, 0.03 = 9.9997691$ $5.68 = 0.7042483$ $10.664 = 1.0279193$ $5.32, 0.09, 0.02 = 0.2438019$ $5.55, 0.07, 0.03 = 9.9184080$ $5.68 = 0.7042483$ $8.8421 = 0.9465582$	2858.513 10.664 2869.177 80 80.95 24.05 40.02 16.47 296 16.174 148.33 30.95 179.28 420.859 240.809 2041.53 3282.339 1414.438 1867.901 3282.339 272.050 3554.359	$Count = 4.6855749$ $275 = 2.4393327$ $504052 = 5.3097408$ $272,050 = 2.4346484$	$5.24, 0.01, 0.07 = 0.1704813$ $60 = 1.7781513$ $72.401 = 1.8597433$ $5.24, 0.01, 0.07 = 9.8295187$ $60 = 1.7781513$ $40.020 = 1.6076700$

Assessment Bills

$256 \dots \sqrt[3]{8}$
 $256 \dots \sqrt[3]{8}$
 $1.67 \dots 6/8$
 $225 \dots$
 $437 \dots 6 \frac{5}{8}$
 $706 \dots 2 \frac{1}{4} \quad - 25$
 $706 \dots 4 \frac{1}{4} \quad - 25$
 $318 \dots 4 \frac{1}{4}$
 $318 \dots 4 \frac{1}{4}$

 $3392 \dots 2 \frac{1}{2}$
 50

 $3342 \dots 2 \frac{1}{4} \quad (2) \quad 1.$

Chelton Ave from Morris to Pulaski
144.3 1/2

$$\begin{array}{r} 477.3\frac{1}{2} \\ \hline 954.76 \\ 97 \\ \hline 857 \end{array} @ 150 = \$1,285.50 \text{ or } 1,250$$

Thirtieth of June

$$\begin{array}{r} 464 \\ \times 2 \\ \hline 928 \\ 63 \\ \hline 868 \end{array}$$
$$\begin{array}{r} 475 \\ 2 \\ \hline 950 \\ 147 \\ \hline 803 \\ 861 \\ \hline 1668 \end{array} \quad - \quad \begin{array}{r} 73.5 \\ 147.0 \\ \hline \end{array}$$

$$\begin{array}{r} 147 \\ 803 \\ 161 \\ \hline 1618 \end{array}$$
 @ 1.50 = 2502 - or 2400

Manayunk Intercepting Lines Connections

Green Lane
S. S. M.

180,, 3 ³/₄
126,, 0 ¹/₄
104,, 6 ¹/₄
92,, 8
72,, 6
293,, 2 ¹/₄
23,, 1
98,, 8 ¹/₄
71,, 3 ³/₈
82,, 6 ¹/₄
172,, 2 ¹/₈
168,, 6 ⁵/₈
43,, 11 ⁷/₈

85 m E. Ch. — 100 ft Public School, — 80 Bas Church

N. S. 20
35 1/10 1/4
118 1/10 1/8
31 1/11
65 1/11 1/8 - 5 alley
113 1/11 1/4
90 1/11 1/2
432 1/11 27/8
231 1/11 23/8
16
12 1/11 5 1/4
199 1/11 1/8
20
270 1/11 3 1/4
60 1/11 6 3/4

$$\begin{array}{r} 4188 \\ 1.50 \\ \hline 209400 \\ 4188 \\ \hline 6282.00 \end{array}$$
$$\begin{array}{r} 20155 \\ 2175 \\ \hline 4188 \end{array}$$

6282 or [†]6200

92 N. 10 16
12 18 20 21

Center St. -

125 -
94 " 10 1/2
150 " 10 1/8
67 " 9 5/8
113 " 1 3/8
107 " 8 3/8
500 " 10 1/8

1159

~~3~~
636 " 3 1/8 - 12.5 W Davis P.E. Church
501 " 6 1/8

1137
125

1012
1159

2171 @ 1.50 = 3256 = \$31.50

~~Lycium Ave.~~

~~465
1000

1465 @ 1.50~~

no. Assessment

Wood St.

123 " 4 1/8
204 " 6 1/8
187 " 3 3/4
204 " 1
131 " 8 1/8
93 " 11 1/4
163
143 " 1 1/8
208 " 3 7/8

1559

@ 1.50 = 2338.50 or \$22.50

3100
2250
6050

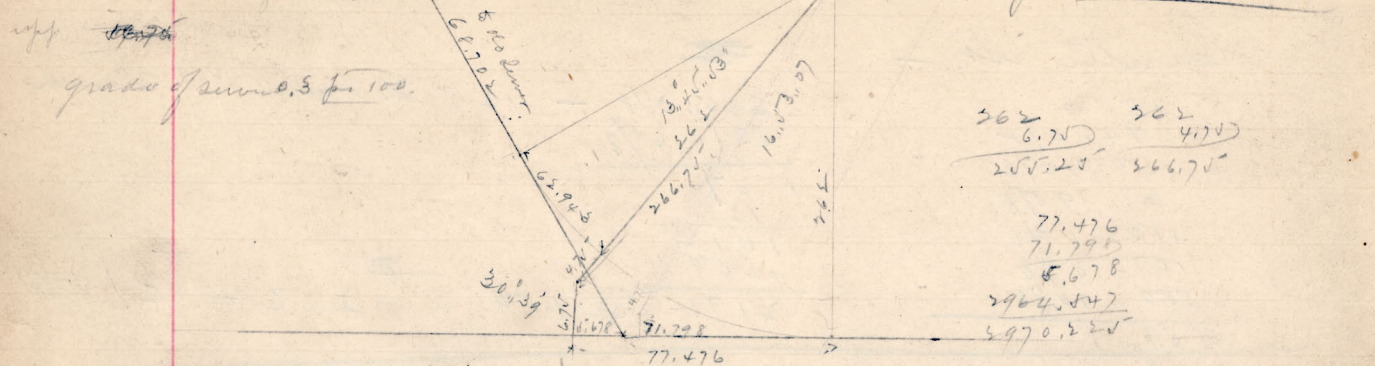
\$1,0400 Manayunk Assessment.

Junction Chamber at 52nd St. & Wyalusing Ave. Mill Creek Sewer. April 30th 1891

Elev at Entrance of Chamber

up ~~100~~

grade of sewer 0.3 ft 100.



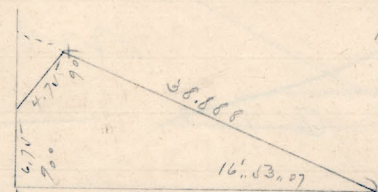
$$\begin{array}{r} 362 \\ 6.75 \\ \hline 255.25 \end{array} \quad \begin{array}{r} 362 \\ 4.75 \\ \hline 366.75 \end{array}$$

$$\begin{array}{r} 77.476 \\ 71.795 \\ 5.678 \\ \hline 2964.547 \\ 2970.225 \end{array}$$

$$\begin{array}{r} 6.75 \\ 4.75 \\ \hline 11.714 \end{array}$$

$$\begin{array}{r} 40.330 \\ 1.442 \\ \hline 38.888 \end{array}$$

$$\begin{array}{r} 8.75 \\ 12.201 \\ \hline 20.951 \end{array}$$



$$\begin{array}{r} 16.0307 \\ 10.0124 \\ \hline 6.5183 \end{array}$$

$$\begin{array}{r} 20.951 \\ 10.475 \\ \hline 31.426 \end{array}$$

$$\begin{array}{r} 0.16.03.07 = 9.9808612 \\ 12.75 = 1.1055102 \\ 12.201 = 1.0863714 \\ 5.16.03.07 = 9.4822196 \\ 3.7034 = 0.5685910 \end{array}$$

$$\begin{array}{r} 20.951 = 8.6787952 \\ 3.703 = 0.5685937 \\ 10.01.24 = 9.2473489 \end{array}$$

$$\begin{array}{r} 0.16.03.07 = 0.0066798 \\ 20.951 = 1.3212045 \\ 21.276 = 1.3278846 \end{array}$$

$$\begin{array}{r} 36.05 = 8.4430947 \\ 8.123 = 0.9097165 \\ 12.41.03 = 9.3528112 \end{array}$$

$$\begin{array}{r} 0.12.41.03 = 0.0107040 \\ 36.05 = 1.5529053 \\ 36.953 = 1.5676593 \end{array}$$

$$\begin{array}{r} 0.12.41.03 = 0.0107040 \\ 13 = 1.1139424 \\ 13.326 = 1.1246974 \end{array}$$

$$\begin{array}{r} 5.12.41.03 = 9.3528112 \\ 13 = 1.1139424 \\ 2.929 = 0.4667546 \end{array}$$

$$\begin{array}{r} 0.12.41.03 = 0.0107040 \\ 10.05 = 1.0021661 \\ 10.302 = 1.0129201 \end{array}$$

$$\begin{array}{r} 5.12.41.03 = 9.3528112 \\ 10.05 = 1.0021661 \\ 2.2645 = 0.3549773 \end{array}$$

$$\begin{array}{r} 0.6.51.43 = 9.9968780 \\ 4.595 = 0.6622855 \\ 4.5621 = 0.6591635 \end{array}$$

$$\begin{array}{r} 5.6.51.43 = 9.0804078 \\ 0.54900 = 9.7395713 \\ 37.320 = 8.4280554 \end{array}$$

$$\begin{array}{r} 4.562 = 0.6591635 \\ 8.58.10 = 9.0872219 \end{array}$$

$$\begin{array}{r} 0.6.51.10 = 0.0032209 \\ 11.32 = 1.0538464 \\ 11.404 = 1.0570673 \end{array}$$

$$\begin{array}{r} 0.16.03.07 = 0.0191388 \\ 13 = 1.1139424 \\ 13.558 = 1.1330822 \end{array}$$

$$\begin{array}{r} 5.16.03.07 = 9.4822196 \\ 13 = 1.1139424 \\ 39.461 = 0.5961630 \end{array}$$

$$\begin{array}{r} 6 = 9.2218487 \\ 4.574 = 0.6621910 \\ 49.57.59 = 9.8840397 \end{array}$$

$$\begin{array}{r} 0.49.57.59 = 9.8083664 \\ 6 = 0.7781513 \\ 3.5074 = 0.5865197 \end{array}$$

$$\begin{array}{r} 0.40.02.01 = 9.8840397 \\ 6.04 = 0.7810369 \\ 4.6205 = 0.6650766 \end{array}$$

$$\begin{array}{r} 5.40.02.01 = 9.9243309 \\ 3.8851 = 0.5894075 \end{array}$$

$$\begin{array}{r} 366.75 - 7.5738952 \\ 255.25 = 2.4069657 \end{array}$$

$$\begin{array}{r} 73.06.53 = 9.9808612 \end{array}$$

$$5.16.03.07 = 9.4822196$$

$$\begin{array}{r} 255.25 = 2.4069657 \\ 77.476 = 1.8891854 \end{array}$$

$$0.16.03.07 = 0.0191388$$

$$\begin{array}{r} 4.75 = 0.6766936 \\ 4.940 = 0.6958324 \end{array}$$

$$5.16.03.07 = 9.4822196$$

$$\begin{array}{r} 4.75 = 0.6766936 \\ 1.4418 = 0.1589132 \end{array}$$

$$5.16.03.07 = 0.5177854$$

$$\begin{array}{r} 11.714 = 1.0687052 \\ 35.571 = 1.5864856 \end{array}$$

$$0.16.03.07 = 0.0191388$$

$$\begin{array}{r} 40.330 = 1.6056244 \end{array}$$

$$0.6.51.43 = 0.0031220$$

$$\begin{array}{r} 6 = 0.7781513 \\ 6.0423 = 0.7812733 \end{array}$$

$$5.6.51.43 = 9.0804078$$

$$\begin{array}{r} 6 = 0.7781513 \\ 0.72203 = 9.8585591 \end{array}$$

$$0.10.01.24 = 0.0066798$$

$$\begin{array}{r} 4 = 0.6020600 \\ 4.0620 = 0.6087398 \end{array}$$

$$5.10.01.24 = 9.2473489$$

$$\begin{array}{r} 4 = 0.6020600 \\ 0.70698 = 9.8494089 \end{array}$$

$$0.16.03.07 = 9.9808612$$

$$\begin{array}{r} 8.375 = 0.9420081 \\ 8.375 = 0.9228693 \end{array}$$

$$5.16.03.07 = 9.4822196$$

$$\begin{array}{r} 2.5415 = 0.4050889 \end{array}$$

$$38.571 = 8.4135714$$

$$1 = 0.0000000$$

$$10.59.06.8.4135714$$

$$0.1.19.04 = 0.0001458$$

$$\begin{array}{r} 13.000 = 1.1139424 \\ 13.000 = 1.1140892 \end{array}$$

$$5.1.19.04 = 8.4135714$$

$$\begin{array}{r} 13 = 1.1139424 \\ 0.38686 = 9.5274578 \end{array}$$

$$0.1.19.04 = 0.0001458$$

$$\begin{array}{r} 12.571 = 1.1000602 \\ 12.571 = 1.1002060 \end{array}$$

$$5.1.19.04 = 8.4135714$$

$$\begin{array}{r} 12.571 = 1.1000602 \\ 0.32627 = 9.5135746 \end{array}$$

$$0.6.51.10 = 0.0032209$$

$$\begin{array}{r} 13 = 1.1139424 \\ 13.097 = 1.1171643 \end{array}$$

$$5.6.51.10 = 9.0872219$$

$$\begin{array}{r} 13 = 1.1139424 \\ 1.5591 = 0.2011653 \end{array}$$

2969
0015
14825
2969

$$\begin{array}{r} 3.178 = 9.4978461 \\ 2.685 = 0.4289443 \\ \hline 40.11.37 = 9.9267904 \end{array}$$

$$\begin{array}{r} C.40.11.37 = 0.1169817 \\ 3.178 = 0.5021539 \\ \hline 4.1604 = 0.6191356 \end{array}$$

$$\begin{array}{r} C.40.11.37 = 9.8830183 \\ 6.326 = 0.8011292 \\ \hline 4.8322 = 0.6841470 \\ \hline 5.40.11.37 = 9.9267904 \\ \hline 4.0826 = 0.6109379 \end{array}$$

$$\begin{array}{r} 1.635 = 9.7864822 \\ 1.34 = 0.1271048 \\ \hline 39.20.14 = 9.9135870 \\ C.39.20.14 = 0.1115798 \\ 1.635 = 0.2135178 \\ \hline 2.1139 = 0.3250976 \end{array}$$

$$\begin{array}{r} Const. 4.6855749 \\ 262 = 2.4183013 \\ \hline 49553 = 4.6950700 \\ 62.943 = 1.7989462 \end{array}$$

$$\begin{array}{r} 140.5 \\ 71.795 \\ \hline 68.702 \\ 62.943 \\ \hline 131.645 \\ \hline 2.25 \\ \hline 129.395 \end{array}$$

$$\begin{array}{r} 3.26 = 9.4867824 \\ 2.685 = 0.4289443 \\ \hline 39.28.32 = 9.9157267 \end{array}$$

$$\begin{array}{r} C.39.28.32 = 0.1124413 \\ 3.26 = 0.5132176 \\ \hline 4.2233 = 0.6256589 \end{array}$$

$$\begin{array}{r} C.39.28.32 = 9.8875587 \\ 6.326 = 0.8011292 \\ \hline 4.8830 = 0.6886879 \\ \hline 5.39.28.32 = 9.9157267 \\ \hline 4.0217 = 0.6044146 \end{array}$$

$$\begin{array}{r} C.39.20.14 = 9.8884202 \\ 6.667 = 0.8239305 \\ \hline 5.1060 = 0.7123507 \\ \hline 5.39.20.14 = 9.9135870 \\ \hline 4.2261 = 0.6259677 \end{array}$$

$$\begin{array}{r} 6.37/8 \\ 4.27/8 \\ \hline 10.61/2 \\ \hline 2.87/4 \\ \hline 7.101/4 \end{array}$$

$$\begin{array}{r} 30.39 \\ 16.53.07 \\ \hline 13.45.13 \end{array}$$

Mill Creek Sewer Pipe north of P.T.N.W.
of Jefferson St.

$$Q = \pi c \sqrt{\frac{a}{a}}$$

$$Q = 3 \times 1.75 \sqrt{\frac{16.7}{1360}}$$

$$Q = \frac{2.25 \times 2.0215}{6.0717}$$

$$Q = 0.749$$

$$n = 3$$

$$c = 0.75$$

$$Q = 16.7$$

$$a = 1360$$

$$v = 18$$

$$16.7 \sqrt{1.2227165}$$

$$2.0215 = 2.056791$$

$$1360 = 4 (3.1331367)$$

$$6.0717 = 0.7833847$$

$$\begin{array}{r} 249 \\ 1360 \\ \hline 44940 \\ 3247 \\ 749 \\ \hline 1018.640 \\ 90 \\ \hline 718 \\ 108 \\ \hline 100 \\ 90 \\ \hline 106 \end{array}$$

$$18 \sqrt{16.7} 6.0717$$

$$\begin{array}{r} 2.0215 \\ 2.25 \\ \hline 101675 \\ 40430 \\ 40430 \\ \hline 4.558325 \\ 4.25219 \\ \hline 298185 \\ 43068 \\ \hline 553973 \end{array}$$

$$3.1416 = 9.5078491$$

$$\sqrt{16.7} = 1.7524326$$

$$2 \times 1.2602817$$

$$4.262 = 8.6301408$$

$$8.530$$

8'6" Cal. 8'9" later

Server on Woodland Ave + 52nd St.

a = 280 - fars.

b. 18' - 1000'

n. 3"

g. 4.3 p. 100'

17th St. Drainage Au

200	571.48
200	40000
40000	30592.00
43200	174240
	316800

48-

18th St. Drainage Area

$$\begin{array}{r} 24.58 \\ 23.79 \\ \hline 48.17 \end{array}$$

45-

19th St. Draining Area

24.32
36.10

50.42

47-

5971	24.01	20.37
<u>0539</u>	29.71	<u>04.21</u>
24.32	24.30	26.16
5050		
45560	5019200.00	27 22.49
174240		20.37
276800		26.12

20th W. Drainage Area

$$\begin{array}{r} 27.54 \\ 27.41 \\ \hline 54.95 \end{array}$$

57

36.46	63.70	31.21	88.50
09.12		03.80	31.21 43/100
<u>27.34</u>	<u>36.46</u>	<u>27.41</u>	<u>27.39</u>
	27.24		

21st St Damage And

$$\begin{array}{r} 22.44 \\ 26.20 \\ \hline 48.80 \end{array}$$

145-

29.10	51.31	30.62	86
<u>06.66</u>	<u>29.10</u>	<u>04.28</u>	<u>20</u>
22.44	22.28	26.36	26

22^{no} St. Drainage Area

$$\begin{array}{r} 25.10 \\ 31.56 \\ \hline 56.66 \end{array}$$

52

29.85	21.95	33.00	20
<u>04.87</u>	<u>29.85</u>	<u>01.89</u>	64
24.98	25.10	31.96	33
			31

23¹⁰ St Drainage Ins

$$\begin{array}{r} 37.64 \\ 31.19 \\ \hline 68.83 \end{array}$$

64

4330	8090	35.60	66
05.75	43.30	04.41	31
<u>37.55</u>	<u>37.60</u>	<u>31.19</u>	<u>31</u>

24th St. Drainage Area.

37.86
54.04
41.58

123 -

40.76	78.78	58.21	89.72	4
<u>53.10</u>	<u>40.76</u>	<u>26.17</u>	<u>05.75</u>	6
37.86	37.82	54.04	53.99	4

6043 91.37
33.33 40000

64, 26
27.11

95

$\frac{06.39}{64.26}$	$\frac{06.00}{64.16}$	$\frac{06.14}{66.78}$	3
			2

16th St. Drainage Area

35.42
24.20

65

4003	7605	3710	7140
<u>0503</u>	<u>4003</u>	<u>0210</u>	<u>3710</u>
3520	3542	3430	3430

69.72

69.72

BU EAU O SURVEYS.

DE RTMINT

15
8 100/10,000
8100/10000
49000

265
32.5
48
45
125.5
47
51
45
268.5
52.
64
384.1
123
8.5
592.15

to 18th St. 5' 6" air

to 21st St. 6' 9" air

to 24th St. 6' 6" air

to River 8' 9" air

@ 14 34300

@ 16 24800

@ 20 81000

140100

18.

8000/12000 6015

additional at 18th St.

51.91
02.70
49.21

52.31
03.21
49.10

49.21
42.80
92.01

4640
53.60
42.80

88.90
46.40
42.56

5680400.00
634400
4314800

392040 (99 = 100 Acs)
394400

125.5
150
320.5 Acs to 18th St.

72
47
51
45
441 Acs. to 21st St.

50
52
64
607 Acs. to 24th St.

42
123
80
857 Acs to River

to 21st St.
4060 78.05
03.15 40.60
37.45 37.45

42.97 82.97 43120
02.90 42.97
40.07 40.00

37.45
40.07
77.52

40000
3100800.00
304920
51600

to 24th St.
54.61 54.40
02.96 02.40
51.65 52. -

52. -
40000
3080000
87800

43060 2167800 (49 = 50)
134240
425400

to River -

44.34 88.78
00.09 44.38
24.29 44.00

44.4
40000
43060 1776000 (41 = 42)
134240
33600

$$Q = ac \sqrt{\frac{c}{a}}$$

$$Q = 3 \times 70 \sqrt{\frac{3}{807}}$$

$$P = 2.25 \sqrt{\frac{3}{807}}$$

$$Q = \frac{2.25 \times 1.316}{441} = \frac{2.961}{441} = .0067$$

$$P = \frac{2.961}{4.173} = .646$$

441
646
2584
2584
2848.86

$$Q = \frac{2.961}{2.673} = .764$$

3820
1528
1128
171.900

$$P = ac \sqrt{\frac{c}{a}}$$

$$P = 3 \times 70 \sqrt{\frac{3}{607}}$$

$$Q = \frac{2.25 \times 1.316}{496} = \frac{2.961}{496}$$

.577
607
4179
3582
362.379

3829
2735
4376
468.779

to 18th St. 8' 0" air

cal 9' to 21st St. 9' 6" air

cal 10' to 24th St. 10' 6" air

cal 11' 0" to River 11' 6" air

Sewer at Front + Lippincott St.

Area = 12.85 Acs.

Slope = 17 -

N. 3"

Coef. .75

Quantity = .753977 ft Acs.

$$Q = KC \sqrt{\frac{e}{a}}$$

$$Q = 3 \times .75 \times \sqrt{\frac{17}{1000}}$$

$$Q = 2.25 \times \frac{2.0305}{6.208}$$

$$\frac{6.208}{2.0305} = .3271$$

$\begin{array}{r} .3271 \\ 14.85 \\ \hline 163.55 \\ 56168 \\ 13084 \\ 3271 \\ \hline 485.7435 \\ 2.25 \\ \hline 24287175 \\ 9714870 \\ 9714870 \\ \hline 1092.922875 \end{array}$	$\begin{array}{r} .3271 \\ 2.25 \\ \hline 163.55 \\ 6542 \\ 6542 \\ \hline .735975 \end{array}$	$\begin{array}{r} 6.208 \overline{) 2.0305} \quad (.3271) \\ \underline{18624} \\ 16810 \\ \underline{12416} \\ 43940 \\ \underline{43454} \\ 4860 \end{array}$
--	---	---

Quantity reaching river 1092.923 cu ft. per

$\begin{array}{r} 2110.75 \\ \underline{5.375} \\ 2105.375 \\ \underline{5.375} \\ 2099.999 \\ 36875 \\ 37625 \\ 16125 \\ 26875 \\ \hline 28.890625 \end{array}$	$\begin{array}{r} 28.8906 \\ \underline{3.14159} \\ 260.0154 \\ 1444520 \\ 288906 \\ 1155624 \\ 288906 \\ 866718 \\ \hline 90.762420054 \end{array}$
--	--

velocity 14 ft. per sec.

reg. size 9" 3" -

Bridge over Cushman Creek
 single span 1211 cu yd @ 10 p. yd. = 12110
 rubble approach 654 @ 6 " = 3924
 1165 cu yd 16034

Down Passayunk

$$q = rc \sqrt{\frac{a}{a}} = q = 3 \times 75 \sqrt{\frac{2}{592}} = \frac{2.25 \times 1.19}{4.93} = \frac{2.6775}{4.93} = .543$$

$$\frac{219.5}{4.170} = 52.562$$

4.65

$$\frac{70.889}{4.6} = 15.41$$

$$\frac{326.094}{3.142} = 103.78$$

$$q = 3 \times 75 \sqrt{\frac{2}{592}}$$

Cal 9'6" down

later 10' 0" down from River to 24' 4" St.

" 8'6" " " 24' 4" St. to 21' St.

" 7'6" " " 21' " 18' St.

" 6' " " 18' " 16'

Down Shunk + Passayunk

$$q = rc \sqrt{\frac{a}{a}} = 3 \times 75 \sqrt{\frac{2}{592}} = \frac{2.25 \times 1.19}{5.41} = \frac{2.6775}{5.41} = .495$$

$$\frac{6.5}{4.25} = 1.53$$

$$\frac{4.25}{3.142} = 1.35$$

$$\frac{84.50}{16900} = .005$$

$$\frac{422.5}{12675} = .033$$

$$\frac{132649.50}{3.1} = 42790$$

$$\frac{1326}{3978} = .333$$

$$\frac{41006}{132.65} = 309$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

$$\frac{6632.5}{5979.5} = 1.11$$

$$\frac{46427.5}{3.1} = 15009$$

$$\frac{132.65}{3.1} = 42.8$$

to River 13'0"

from 21' to 24' 11'9"

from 18' to 21' 9'0"

to 18' 7'0"

$$q = 3 \times 75 \sqrt{\frac{2}{592}} = \frac{2.25 \times 1.19}{4.96} = \frac{2.6775}{4.96} = .539$$

$$\frac{4.72}{20.25} = .233$$

$$\frac{3.142}{6050} = .0005$$

$$\frac{6050}{12100} = .5$$

$$\frac{3025}{9075} = .333$$

$$\frac{9075}{9504.55} = .955$$

$$\frac{9504.55}{3} = 3168$$

$$\frac{3168}{58.2} = 54.4$$

$$\frac{58.2}{2076} = .028$$

$$\frac{2076}{3114} = .667$$

$$\frac{3114}{33216} = .094$$

$$\frac{33216}{3.142} = 10572$$

$$\frac{10572}{16} = 660.75$$

$$\frac{660.75}{10852} = .061$$

$$\frac{10852}{3142} = 3.45$$

$$\frac{3142}{50.272} = 62.5$$

$$\frac{50.272}{4} = 12.57$$

$$\frac{12.57}{36124} = .00035$$

$$\frac{36124}{72248} = .5$$

$$\frac{72248}{180625} = .4$$

$$\frac{180625}{54186} = 3.33$$

$$\frac{54186}{56750.804} = .955$$

$$\frac{56750.804}{4.4} = 12898$$

$$\frac{12898}{2268} = 5.69$$

$$\frac{2268}{24948} = .091$$

$$\frac{607}{52} = 11.67$$

$$\frac{52}{2428} = .021$$

$$\frac{2428}{3030} = .798$$

$$\frac{3030}{327.78} = 9.24$$

$$\frac{9.24}{1975} = .0047$$

$$\frac{1975}{1984} = .995$$

$$\frac{1984}{327.78} = 6.05$$

$$\frac{6.05}{52} = .116$$

$$\frac{52}{2428} = .021$$

$$\frac{2428}{3030} = .798$$

$$\frac{3030}{327.78} = 9.24$$

$$\frac{9.24}{1975} = .0047$$

$$\frac{1975}{1984} = .995$$

$$\frac{1984}{327.78} = 6.05$$

$$\frac{6.05}{52} = .116$$

$$\frac{52}{2428} = .021$$

$$\frac{2428}{3030} = .798$$

$$\frac{3030}{327.78} = 9.24$$

$$\frac{9.24}{1975} = .0047$$

$$\frac{1975}{1984} = .995$$

$$\frac{1984}{327.78} = 6.05$$

$$\frac{6.05}{52} = .116$$

$$\frac{52}{2428} = .021$$

$$\frac{2428}{3030} = .798$$

$$q = 3 \times 75 \sqrt{\frac{2}{441}} = \frac{2.25 \times 1.19}{4.573} = \frac{2.6775}{4.573} = .585$$

$$\frac{4.573}{2.6775} = .171$$

$$\frac{2.6775}{2391.5} = .00112$$

$$\frac{2391.5}{38600} = .062$$

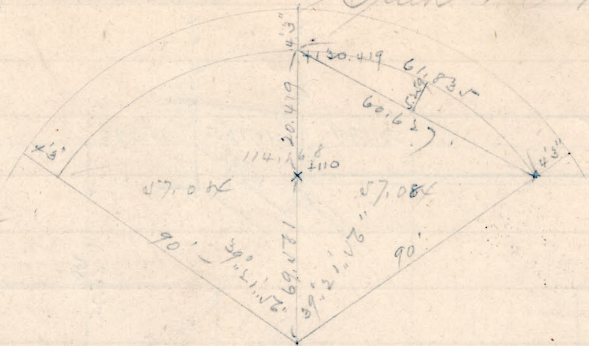
$$\frac{38600}{32664} = 1.185$$

$$\frac{32664}{19360} = 1.69$$

10/6/91

19

Bridge over Crick Creek - Massahickon Interchange

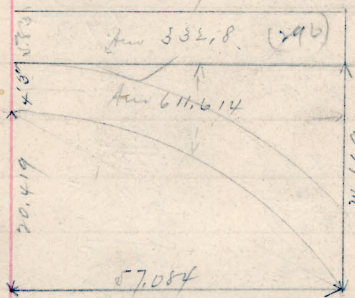


$$\begin{aligned} 90. &= 8.5457575 \\ 69.581 &= 1.8424907 \\ 39.21.56 &= 9.8882482 \\ 5.39.21.56 &= 9.9140272 \\ 69.581 &= 1.8424907 \\ 57.084 &= 1.7565179 \end{aligned}$$

$$\begin{aligned} 57.084 &= 114.168 \\ 240.36.04 &= 70.19.02 \end{aligned}$$

$$\begin{aligned} 5.70.19.02 &= 0.4464655 \\ 30.313 &= 1.4816289 \\ 84.741 &= 1.9280944 \\ 5.217 & \end{aligned}$$

$$\begin{aligned} \text{const} &= 4.6855749 \\ 90 &= 1.9542425 \\ 141716 &= 5.1514189 \\ 61.835 &= 1.7912363 \\ 5.70.19.02 &= 0.0261466 \\ 5.39.21.56 &= 9.8022713 \\ 90 &= 1.9542425 \\ 60.627 &= 1.7826604 \end{aligned}$$



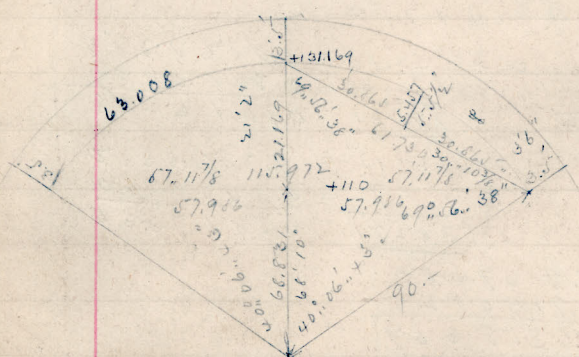
$$\begin{aligned} 24.669 &= 57.084 \\ 98.676 &= 197352 \\ 172683 &= 123345 \\ 1408205190 &= 796591 \\ 611.614 & \end{aligned}$$

$$\begin{aligned} 61.835 &= 90 \\ 2782.575 &= 254223 \\ 254223 &= 2568753933 \\ 2782.575 &= 213.824 \end{aligned}$$

$$\begin{aligned} 84.741 &= 20.313 \\ 554223 &= 84741 \\ 57.084 &= 10.209 \\ 513756 &= 114168 \\ 57084 &= 582770556 \\ 213.821 &= 796.591 \end{aligned}$$

$$\begin{aligned} 57.084 &= 57.084 \\ 171252 &= 456672 \\ 285420 &= 33279.972 \end{aligned}$$

$$\begin{aligned} 90 &= 31.169 \\ 68.831 & \end{aligned}$$



$$\begin{aligned} 90 &= 8.5457575 \\ 68.831 &= 1.8377841 \\ 40.06.23 &= 9.8835416 \\ 2(39.53.1) &= 69.56.38 \end{aligned}$$

$$\begin{aligned} 5.69.56.38 &= 0.0271692 \\ 5.69.56.38 &= 0.4376124 \\ 30.165 &= 1.4894663 \\ 84.043 &= 1.9270787 \\ 6.457 & \end{aligned}$$

$$\begin{aligned} 5.40.06.23 &= 9.8090767 \\ 90 &= 1.9542525 \\ 2(61.230) &= 1.7904984 \\ 30.865 &= 9.9255361 \\ 66.841 &= 1.8377841 \\ 57.986 &= 1.7633202 \\ 115.972 & \end{aligned}$$

$$\begin{aligned} \text{const} &= 4.6855749 \\ 90 &= 1.9542425 \\ 944403 &= 5.1595762 \\ 63.008 &= 1.7993936 \\ 63.008 &= 1.376 \\ 61.632 & \end{aligned}$$

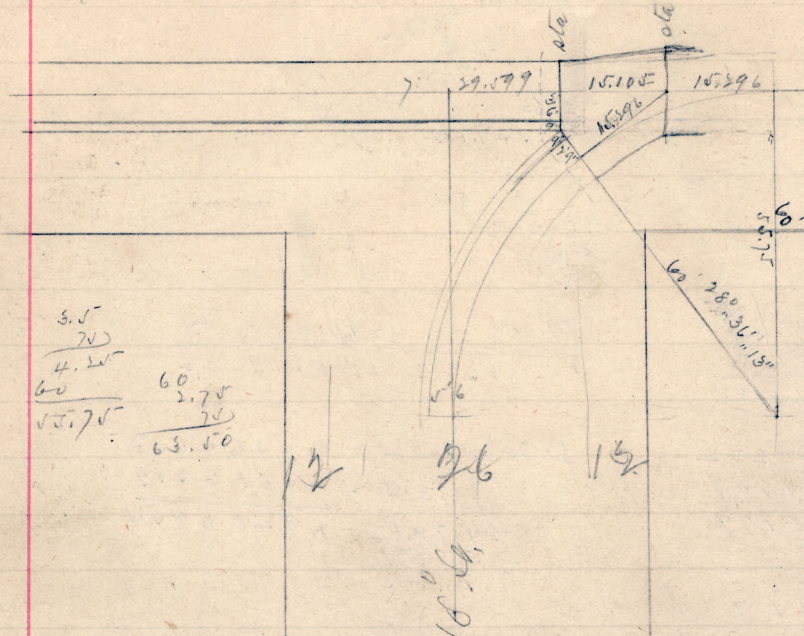
10.612
11.497
22.179

Chamber at 18' 4"

2(5' 6")
2' 9"

5.5
20
6.25

346
772
20118



15.296
15.105
29.401
60.000

3.5
20
4.25
60
15.75
60
2.75
20
63.50

15.105
15.296
20.401
29.401

130
13
133
29.599
103.401
15.105
88.296

13.196
7.626
5.570

15.105
2.992
12.113
13.237
3.5
9.737
4.5
5.237

60 = 8.2218457
63.50 = 8.2218457
14.18.2.5
5.14.18.6 = 9.4064172
60 = 1.7781513
15.296 = 1.1845685

11.497
1.691
13.188
23.870
10.682

2(28.36.13) = 9.7366350
60 = 1.7781513
32.718 = 1.5147863
2(28.36.13) = 9.7366350
4.25 = 0.6283889
2.3175 = 0.3650239

15.296
2.317
17.613
32.718
15.105

2(3.571)
6.761

4.5
3.026
7.526
3.817
3.709
4.037
7.526
41.563
5.781
4.037
1.74

63.50 = 8.1972263
5.75 = 1.7462449
61.23.47 = 9.9434712

15.105
15.296
32.401
13.237

2(28.36.13) = 9.9434712
6.25 = 0.7958800
2.992 = 0.7393512
5.26.36.13 = 9.7366350
2.9921 = 0.4759862

13.237 = 8.8782104
2.9921 = 0.4759862
12.44.15 = 9.3541966

6.785
3.5
3.25

2(12.44.15) = 0.0108215
13.237 = 1.1217096
15.571 = 1.1326111

4 = 9.3979400
3.237 = 0.5165364
34.47.24 = 9.9144754

3.5
2.574
6.26

5.34.47.24 = 9.8418344
3.5 = 0.5165364
2.5822 = 0.3583698

2.2822

2(28.36.13) = 0.0565288
7 = 0.8450980
7.9731 = 0.9016268

5.34.47.24 = 9.7563091
3.5 = 0.5440680
1.9970 = 0.3003771

5.28.36.13 = 9.7366350
7 = 0.8450980
3.8171 = 0.5817330

2(34.47.24) = 9.9144754
3.5 = 0.5440680
2.874 = 0.4585434

12.113 = 8.9167483
5.237 = 0.7190826
23.22.52 = 9.6358309

15.105 = 8.8109080
1 = 0.0000000
30.47.16 = 8.8209010

2(23.22.52) = 0.0372116
12.113 = 1.0832517
13.196 = 1.1204633

2(30.47.16) = 0.0009497
15.105 = 1.1790920
15.137 = 1.1800417

2(23.22.52) = 0.0372116
7 = 0.8450980
7.6262 = 0.8823096

2(34.47.16) = 0.0009497
7 = 0.8450980
7.0153 = 0.8460477

5.23.22.52 = 9.6358309
7 = 0.8450980
3.0264 = 0.4809289

5.30.47.16 = 8.1209080
7 = 0.8450980
0.4634 = 9.6660060

1234567890

33
33
33
33
33

Survey on Passajunk Ave & Shunk St 10/30/91

$$5.23^{\circ} 00' 27'' = 9.6280099$$

$$17 = 1.2304489$$

$$72187 = 0.8584588$$

$$2.385$$

$$16480$$

$$13800$$

$$401035$$

$$1950$$

$$11$$

$$35$$

$$26$$

$$37$$

$$19$$

$$2028$$

$$12.735$$

$$2040.738$$

$$\text{not tang } 23^{\circ} 00' 27'' = 4.246$$

$$30$$

$$8.4920$$

$$2040.738$$

$$8.492$$

$$2049.230$$

$$13.992$$

$$2063.232$$

$$120.25$$

$$1943.972$$

$$42.387$$

$$1985.359$$

$$4.709$$

$$43.495$$

$$2033.562$$

$$36.62$$

$$1996.943$$

$$72.250$$

$$2069.222$$

$$36.62$$

$$2032.602$$

$$158.628$$

$$2191.221$$

$$40.032$$

$$2231.262$$

$$177.34$$

$$12$$

$$46.049$$

$$2466.652$$

$$30.610$$

$$2497.267$$

$$26$$

$$2523.267$$

$$12$$

$$396$$

$$12$$

$$2943.267$$

$$26$$

$$2969.267$$

$$26$$

$$12$$

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$$5.66^{\circ} 59' 33'' = 2.3548$$

$$42.387$$

$$2.355$$

$$40.032$$

$$42.3870$$

$$42.387$$

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$$3558$$

$$3539$$

$$19$$

$$123.0027$$

$$11.30.12$$

$$4/130.37$$

$$32.34$$

$$562.59$$

$$528.25$$

$$2024$$

$$162720$$

$$2034$$

$$36.6120$$

$$43.495$$

$$86.990$$

$$120.25$$

$$38.26$$

$$5000.9$$

$$5026$$

$$18$$

$$208$$

$$26$$

$$0468$$

$$178.621$$

$$173.52$$

$$25.128$$

$$5.502$$

$$120.25$$

$$43.49$$

$$76.76$$

$$153.52$$

$$43.495$$

$$2.572$$

$$46.049$$

$$4.23^{\circ} 00' 27'' = 0.4079882$$

$$173.625 = 2.2396123$$

$$444.222 = 2.6476005$$

$$430.23$$

$$13.992$$

$$C. 66^{\circ} 59' 33'' = 0.4079882$$

$$47 = 1.6720979$$

$$120.250 = 2.0800861$$

$$C. 66^{\circ} 59' 33'' = 0.4079882$$

$$17 = 1.2304489$$

$$43.495 = 1.6384371$$

$$const. = 4.6855749$$

$$na 180 = 2.2552725$$

$$82187 = 4.9181719$$

$$72.280 = 1.8590193$$

$$C. 23^{\circ} 00' 27'' = 0.0359980$$

$$12 = 1.0791812$$

$$13.037 = 1.1151792$$

$$5.23^{\circ} 00' 27'' = 9.6280100$$

$$18 = 1.2552725$$

$$7.6433 = 0.8832825$$

$$C. 23^{\circ} 00' 27'' = 0.0359980$$

$$26 = 1.4149733$$

$$28.247 = 1.4509713$$

$$C. 66^{\circ} 59' 33'' = 0.4079882$$

$$62 = 1.7923917$$

$$108.628 = 2.5003799$$

$$C. 66^{\circ} 59' 33'' = 0.4079882$$

$$82 = 1.9138139$$

$$209.798 = 2.3218021$$

$$5.6$$

$$const. 4.6855749$$

$$60 = 1.7781513$$

$$221027 = 5.3444434$$

$$64.293 = 1.8081696$$

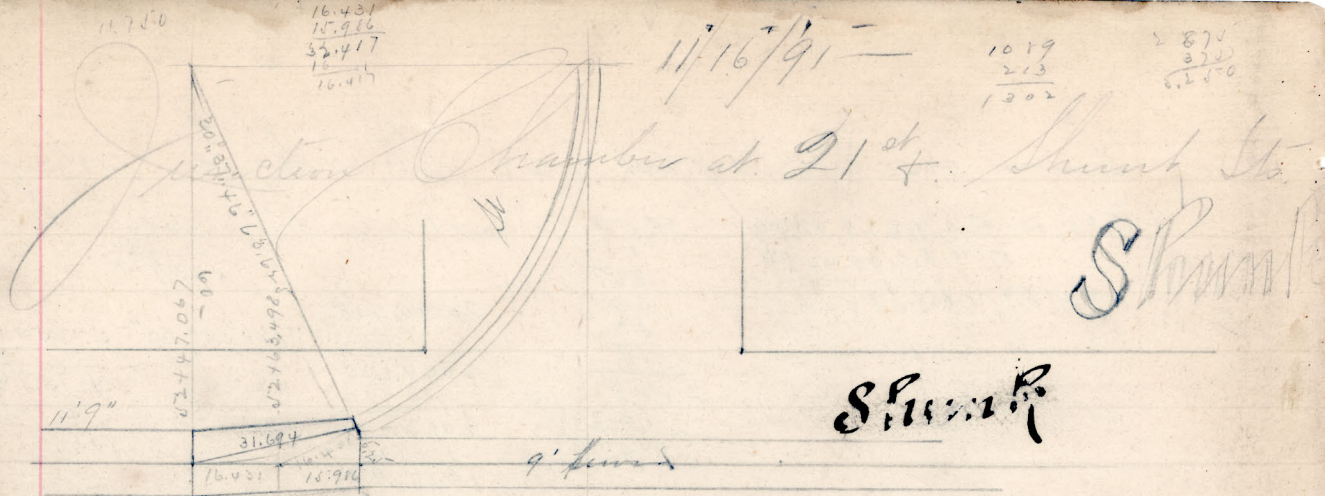
$$430.23$$

$$13.037$$

$$13.037$$

$$456.304$$

$$480.860$$



5247.067
 16.431
 5263.498
 82.417
 16.431
 15.986
 5263.498
 5279.484

60
 11.25
 54.75
 $63.625 = 8.1963722$
 $54.75 = 1.7383841$
 $30.37.46 = 9.9347563$
 $5.15.18.53 = 9.4375052$
 $60 = 1.7781513$
 $16.431 = 1.2156565$
 $5.30.37.46 = 9.7723894$
 $84.75 = 1.7383841$
 $82.417 = 1.5107735$
 $8743.41.07 = 0.0157025$
 $5.30.37.46 = 9.7071302$
 $60 = 1.7781513$
 $31.694 = 1.5009840$

$co. 30.37.46 = 9.9347409$
 $6.5 = 0.8129124$
 $5.5931 = 0.7476543$
 $5.30.37.46 = 9.7723894$
 $33116 = 0.5200437$
 $32.417 = 8.4892272$
 $1.875 = 0.1383027$
 $29.25.44 = 8.6275299$
 $co. 3.25.44 = 0.0003904$
 $32.417 = 1.5107728$
 $32.446 = 1.5111632$
 $co. 2.25.44 = 0.0003904$
 $16 = 1.2041200$
 $16.015 = 1.2045104$
 $5.24.25.44 = 8.6275299$
 $16 = 1.2041200$
 $.67865 = 9.8316499$

$15.343 = 8.8140897$
 $3.3116 = 0.5200437$
 $12.10.48 = 9.3341334$

$co. 12.10.48 = 0.0098879$
 $15.243 = 1.1859103$
 $15.696 = 1.1957982$
 $5.12.10.48 = 9.3341334$
 $15.243 = 1.1859103$
 $3.2116 = 0.5200437$
 $5.16.52.10 = 0.0006486$
 $5.18.26.58 = 9.5003294$
 $2.875 = 0.4586375$
 $9.1120 = 9.9596158$

32.417
 3.312
 29.105
 $5.875 = 2.241$
 $4.5 = .971$
 $1.875 = 3.312$
 5.875
 679
 5.196
 675
 32.446
 16.015
 16.481

$co. 12.10.48 = 0.0098879$
 $4.5 = 0.6032125$
 $4.6038 = 0.6631004$
 $5.12.10.48 = 9.3341334$
 $4.5 = 0.6032125$
 $.97128 = 9.9873459$

$29.105 = 8.6360324$
 $4.968 = 0.6961816$
 $9.41.12 = 9.2322140$
 $co. 9.41.12 = 0.0062364$
 $29.105 = 1.4639676$
 $29.526 = 1.4702040$
 $co. 9.41.12 = 0.0062364$
 $16 = 1.2041200$
 $16.231 = 1.2103062$
 $co. 9.41.12 = 9.2322140$
 $16 = 1.2041200$
 $2.7311 = 0.4363340$

$co. 30.37.46 = 9.9347409$
 $3.635 = 0.5093080$
 $3.1192 = 0.4940489$
 $5.30.37.46 = 9.7723894$
 $1.8469 = 0.2664383$
 $30.570 = 8.5147046$
 $8.369 = 0.9226736$
 $15.18.38 = 9.4373782$

$co. 15.18.38 = 0.0156939$
 $30.57 = 1.4652954$
 $31.695 = 1.5009893$
 $co. 15.18.38 = 0.0156939$
 $16 = 1.2041200$
 $16.589 = 1.2198139$
 $5.15.18.38 = 9.4373782$
 $16 = 1.2041200$
 $4.3802 = 0.6414982$
 $5.86.52.10 = 0.0006486$
 $74.40.52 = 9.9842888$
 $2.675 = 0.4586375$
 $2.7770 = 0.4435752$

15.986
 16.431
 32.417
 5.75
 75
 6.50
 $2.149.32.14$
 $74.41.07$
 $15.18.53$

$2.15.696$
 7.848
 4.605
 3.244

3.3116
 971
 2.3406

$30.37.46$
 $12.10.48$
 $18.26.58$

2.875
 $.75$
 3.625
 5.593
 0.75
 4.5
 10.843
 5.875
 4.968

5.875
 2.731
 8.606
 5.196
 13.802
 6.901
 5.196
 1.705

31.695
 16.589
 15.106

6.901
 2.675
 4.226

29.526
 16.231
 13.295

$30.37.46$
 $74.41.07$
 $105.19.08$
 $18.26.58$
 $86.52.10$

12/26/91

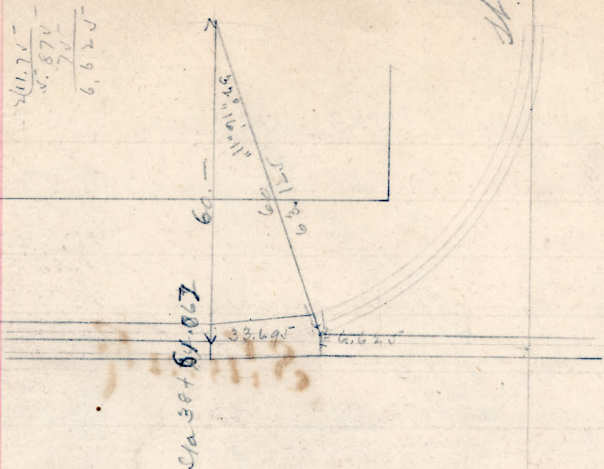
3375
1.625

23

2.625
60.75
63.375

2.625
2.625

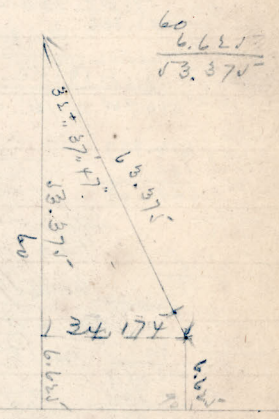
Shunk. - A.



32° 16' 11"
16.055
11.75
75
4.651
17.151
17.401
6.700
6.5
5.875
6.25
11.276
6.5
4.776
10
2.936
7.064
10
17.066
6.5
2.799
9.299
6.187
10.486
7.743
6.187
1.556
17.719
10.384
7.335

63.125 = 8.1997986
53.375 = 1.7273379
32° 16' 11" = 9.9271365
5.32° 16' 11" = 9.8002283
53.375 = 1.7273379
33.695 = 1.5275662
5.16° 06.05 = 9.4613360
60 = 1.7781513
17.357 = 1.2394873
0.32° 16' 11" = 9.9271365
5.00 = 0.7403627
4.6505 = 0.6674992
5.32° 16' 11" = 9.8002283
2.9358 = 0.4677275
17.151 = 8.7657106
2.936 = 0.4677561
9.42° 50" = 9.2334667
0.9° 42' 50" = 0.0022717
17.151 = 1.2342894
17.401 = 1.2405611
20. = 8.6989700
0.625 = 9.7958800
1.4724 = 8.4948800
19.9042° 50" = 9.2334667
5.875 = 0.7690079
10.057 = 0.0024746
17.064 = 8.7679192
4.776 = 0.6790643
15° 36' 10" = 9.4469835
0.15° 36' 10" = 0.0163769
17.064 = 1.2320808
17.719 = 1.2484577
5.15° 36' 10" = 9.4469835
10 = 1.0000000
2.7989 = 0.4469835
0.15° 36' 10" = 9.9836331
6.5 = 0.8129134
6.2554 = 0.7965365
5.15° 36' 10" = 9.4469835
17.020 = 0.2435200
0.16° 36' 01" = 9.9814357
2.375 = 0.3756636
2.2752 = 0.3570993
5.16° 38' 01" = 9.4753106
6.7984 = 9.8324099

20.151 = 8.6957034
3.983 = 0.6002103
11.910° 57" = 9.2959137
0.11° 10' 57" = 0.0083221
20.151 = 1.3042966
20.541 = 1.3126187
5.63° 10' 57" = 0.0494150
5.74° 21' 50" = 9.9836231
10.344 = 1.0163647
11.205 = 1.0494028
563° 10' 57" = 0.0494150
511° 10' 57" = 9.2875916
10.344 = 1.0163647
2.2562 = 0.3533713
572° 53' 49" = 0.0196432
584° 32' 50" = 9.9980303
2.375 = 0.3756636
2.4736 = 0.3953371
4.72° 53' 49" = 0.0196432
522° 33' 21" = 9.5838600
2.375 = 0.3756636
9.5316 = 9.9791668



63.375 = 8.1980820
53.375 = 1.7273379
32° 37' 47" = 9.9254199
32° 37' 47" = 9.8063549
53.375 = 1.7273379
34.174 = 1.5336928
14.174

0.99484
0.01251
0.00024
1.00759
60
60.45540

See page 32

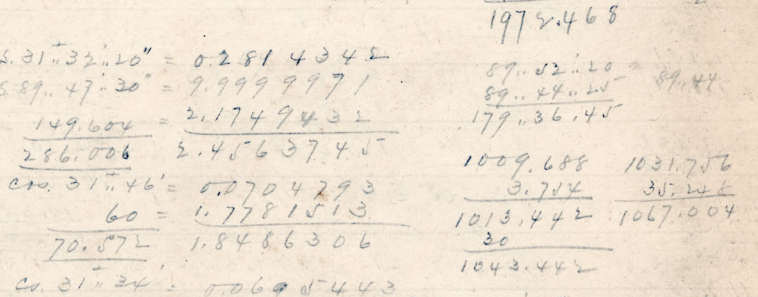
Wingohocking sewer from Willow Ave to Hamlet St.

$\cos 16^{\circ} 11' = 0.9572477$
 $\sin 16^{\circ} 11' = 0.278300$

31.32.20"
 28.026"
 149.604
 70.07.40"
 29.02.20"

$$\begin{aligned} \cos 10^{\circ} 11' &= 0.0282477 \\ 20 &= 1.3080300 \\ \hline 21.051 &= 1.3232777 \\ 5.10^{\circ} 11' &= 9.5164838 \\ 6 &= 0.7781513 \\ \hline 1.9707 &= 0.2946351 \end{aligned}$$
$$\begin{array}{r} 35.84130 = 9.8597991 \\ \underline{120} = 2.0791812 \\ 86.893 = 1.9389803 \\ 720 = 7.9208188 \\ \underline{34.904} = 1.5434969 \\ 16.56.05 = 9.4643157 \\ \underline{3.16.56.05} = 9.9807409 \\ 120 = 2.0791812 \\ \underline{114.795} = 2.0899221 \end{array}$$
$$\begin{aligned} \text{const} &= 4.68555749 \\ 120 &= 2.0791812 \\ 60965 &= 4.7850806 \\ 35.468 &= 1.5498367 \\ C. 18^{\circ} 27' &= 0.0229168 \\ 10 &= 1.0000000 \\ 10.542 &= 1.0229168 \\ 5.18^{\circ} 27' &= 9.5232589 \\ 8 &= 0.9030900 \end{aligned}$$
$$\begin{array}{r} 26640 \\ 16 \cdot 11 = 9.5164838 \\ 26 = 1.4149733 \\ \hline 8.62400 = 0.9314571 \end{array}$$
$$\begin{aligned} 616.961 &= 2.7902577 \\ \underline{616.967} &= 2.7902622 \\ 5.17^{\circ} 56' 35'' &= 7.6563895 \\ \underline{616.961} &= 2.7902577 \\ \underline{2.7967} &= 0.4466472 \\ 5.17^{\circ} 56' 35'' &= 0.8112483 \\ 5.17^{\circ} 56' 35'' &= 9.9999955 \\ 5.17^{\circ} 56' 35'' &= 1.7307745 \\ \underline{176.612} &= 2.2471183 \\ 5.17^{\circ} 56' 35'' &= 0.8112483 \end{aligned}$$
$$\begin{array}{r} 72.19'00 = 9.9789156 \\ 24.42 = 2.7357745 \\ \hline 166.610 \quad 2.2261084 \end{array}$$

$59.146 = 1.5926838$
 $5.4550747 = 0.0019666$
 $90.29 = 1.9556397$
 $90.700 = 1.9576063$
 $\text{const} = 4.6555749$
 $90.29 = 1.9556397$
 $935 = 5.5117965$



$1001.000 = 3.0004342$
 $.89''44'21'' = 0.00000045$
 $.00''13'14'' = 7.8301453$
 $.000 = 2.7442930$
 $3.7536 = 0.0744433$
 $.31''40' = 0.0700109$
 $.20 = 1.4771213$
 $35.246 = 1.5471322$

35.246
 1036.248
 1043.710
 7.467
 7.467
 $59.44.10$
 13.018
 14.12
 58.520
 4

57th & Supple No

61.24	58.00	57.80	24.97	47.18	26.54
05.20	02.08	01.75	02.90	24.97	04.46
56.09	55.98	56.05	22.07	22.21	22.08
52.05					
55.95					
3/168.12			55.19		18.00
56.04 - (1)		56.09 - 1	00.79		03.60
		5.3.11-3	54.40		54.40

26.09-1
 22.21-2
 24.40-3

 132.78

$$\begin{array}{r} 40000 \\ 43520 \overline{) 5308000} \quad (121.9 \\ \underline{43560} \\ 94200 \\ \underline{87120} \\ 80800 \\ \underline{43520} \\ 372400 \\ \underline{372040} \\ 460 \end{array}$$

123 Acres

$$\begin{array}{r} 84.40 \\ 02.16 \\ \hline 51.84 \end{array}$$

$$\begin{array}{r} 52.12 \\ 02.37 \\ \hline 51.75 \end{array}$$

$$\begin{array}{r} 13.22 \\ 01.47 \\ \hline 51.71 \end{array}$$

$$\begin{array}{r} 51.8 \\ 50000 \\ 20725000 \\ 174240 \\ \hline 329600 \end{array}$$

234

48 Acc. -

587

64

$$\phi = \pi c \sqrt{\frac{v}{a}} = \phi = 3 \times 10^8 \sqrt{\frac{17}{1706}} = \frac{.75}{2.25} \times \frac{2.03}{6.026} \times \frac{2.0300}{1.9278} (.316)$$

$$\begin{array}{r} 2.25 \times 0.316 = .711 \\ \underline{.316} \\ 1350 \\ \underline{225} \\ 675 \\ \underline{00} \\ 71100 \end{array}$$
$$\begin{array}{r} 1706 \\ \times 711 \\ \hline 1706 \\ 11942 \\ \hline 1212.966 \end{array}$$
$$\begin{array}{r} 113.2 \\ \underline{11.25} \\ 5660 \\ 2264 \\ \underline{1132} \\ 1132 \\ \underline{1273.500} \\ 314162 \\ 36 \\ \underline{188496} \\ 94248 \\ \underline{113.1976} \end{array}$$
$$\begin{array}{r} 2,0300 \quad (.316) \\ \underline{19278} \\ 10220 \\ \underline{6486} \\ 37940 \end{array}$$
$$\begin{array}{r} 113.2 \\ 1132 \\ \hline \checkmark 245 \end{array}$$

10 ft velocity

$$2.25 \times 0.325 = 731$$

$$\begin{array}{r} 17520 \\ 14620 \\ 3650 \\ \hline 731 \end{array}$$

$$\begin{array}{r} 95 \\ 20 \\ \hline 1900 \end{array}$$

$$1111.120 \text{ cu ft.}$$

$$\text{nach } 1000 \text{ p. a. c.}$$

95
20

1900

6.244 / 2.0300 0.32
18732
 15680
12488
 31920

$$\begin{array}{r}
 3.1416 \\
 \underline{30.25} \\
 157010 \\
 62832 \\
 \hline
 94248 \\
 \hline
 95.033400
 \end{array}$$

$$\begin{array}{r} 3.1416 \\ \times 25 \\ \hline 157080 \\ 62832 \\ \hline 78.5400 \\ 719 \\ \hline 7065 \\ 765 \\ \hline 1491.5 \end{array}$$
$$\begin{array}{r} 4.15 \\ \underline{4.00} \\ 225 \\ 100 \\ \hline 20.25 \end{array}$$
$$\begin{array}{r} 4.16 \\ 525 \\ \hline 080 \\ 32 \\ \hline 400 \end{array} \quad \begin{array}{r} 4.25 \\ 4.25 \\ \hline 2125 \\ 850 \\ \hline 1700 \\ 18.0625 \end{array}$$

$$\begin{array}{r}
 2.2.5624 \\
 3.1416 \\
 \hline
 135372 \\
 22562 \\
 90248 \\
 22562 \\
 \hline
 67686 \\
 \hline
 70.8807792
 \end{array}$$

$$\begin{array}{r} 70.88 \\ 19 \\ \hline 63792 \\ 7088 \\ \hline 1346.72 \end{array}$$
$$\begin{array}{r} 56.74 \\ 20 \\ \hline 1134.80 \end{array}$$

1260

2026

0.170

3/22/92

40.23
20
4288

Cal. for Swm from Berkeley St stream + Broad + Courtland

150
81.308
128.506
359.974

220.167
10.011
45.832
10.091

286.101
1.161
284.940
148.202

136.738
2.58
30.033
422.771
195.443

618.214
40.011
56.042
461.542

21.568
439.974
5.046
434.928

28.692
46.362
7.04
456.580

3.443
453.137
30.069
418.068

148.202
269.866
618.214
888.080

63.472
951.552
210.761
1162.313

26
1188.313
419.667
1607.980

26
1633.98
419.667
2053.647

26
2079.447
419.667
2499.114

26
2450.314
94.240
2549.562

427
2976.562
94.240
3070.810

369.667
3440.477
26
3466.477

419.667
3886.144
26
3912.144

13
3899.144
60
3959.144

31.152
3927.992
313.778
4241.762

21.152
4272.914
68.697
4341.511

$$C. 2^{\circ} 39' 30'' = 0.0004676$$

$$10 \quad 1.0000000$$

$$10.011 \quad 1.0004676$$

$$C. 21^{\circ} 58' 1'' = 0.0327754$$

$$30 \quad 1.4771213$$

$$32.351 \quad 1.5098967$$

$$5.5.59.25 = 0.1708536$$

$$150 = 2$$

$$148.202 = 2.1708536$$

$$C. 21^{\circ} 58' 1'' = 0.0327754$$

$$42.5 = 1.6283889$$

$$45.832 = 1.6611643$$

$$Const. = 4.6855749$$

$$R = 60 = 2.0000000$$

$$403131 = 8.6054462$$

$$1954432, 2910211$$

$$Nat. 5. 2^{\circ} 39' 30'' = 0.0464$$

$$20$$

$$3325$$

$$928$$

$$1.1605$$

$$C. 21^{\circ} 58' 1'' = 0.0327754$$

$$42.5 = 1.6283889$$

$$45.832 = 1.6611643$$

$$5. 21^{\circ} 58' 1'' = 9.6059912$$

$$20 = 1.3979450$$

$$10.091 = 1.0039312$$

$$5. 21^{\circ} 58' 1'' = 9.6059912$$

$$12.5 = 0.2969100$$

$$0.50455 = 0.7029012$$

$$C. 29. 23. 20'' = 0.0598278$$

$$20 = 1.3979450$$

$$28.692 = 1.4577678$$

$$5. 29. 23. 20'' = 9.7506747$$

$$12.5 = 1.2969100$$

$$7.0402 = 0.8475847$$

$$C. 29. 23. 20'' = 0.0598278$$

$$3 = 0.4771213$$

$$0.4431 = 0.5364491$$

$$5. 20. 18. 20'' = 9.7667718$$

$$60 = 1.7781513$$

$$35.069 = 1.5449231$$

$$Const. = 4.6855749$$

$$R = 60 = 1.7781513$$

$$215200 = 5.3388047$$

$$63.472 = 1.8025809$$

$$5. 30. 18. 20'' = 9.7667718$$

$$35 = 1.5797836$$

$$22.210 = 1.3465554$$

$$C. 29. 23. 20'' = 0.0598278$$

$$17.5 = 1.2460360$$

$$30.085 = 1.3028658$$

$$5. 29. 23. 20'' = 9.7506747$$

$$22 = 1.3424227$$

$$12.340 = 1.0930974$$

$$150$$

$$68.01.19$$

$$248.01.09$$

$$332$$

$$2111.07.07$$

$$55.09.25$$

$$111.08.51$$

$$60$$

$$6660$$

$$58$$

$$6718$$

$$60$$

$$403080$$

$$403131$$

$$0.1708536$$

$$60 = 1.7781513$$

$$86.921, 1.9490029$$

$$226.135$$

$$22.210$$

$$203.925$$

$$3.1416$$

$$60$$

$$2188.4960$$

$$94.248$$

$$226.135$$

$$20.085$$

$$12.500$$

$$258.220$$

$$12.39$$

$$245.830$$

$$35.069$$

$$210.761$$

$$395.667$$

$$26$$

$$419.667$$

$$236.385$$

$$220.167$$

$$2456.502$$

$$228.276$$

$$10.011$$

$$45.832$$

$$284.119$$

$$148.202$$

$$135.917$$

$$220$$

$$421.917$$

$$195.443$$

$$617.360$$

$$121$$

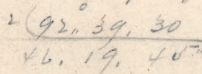
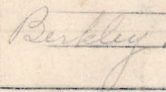
$$618.181$$

$$618.214$$

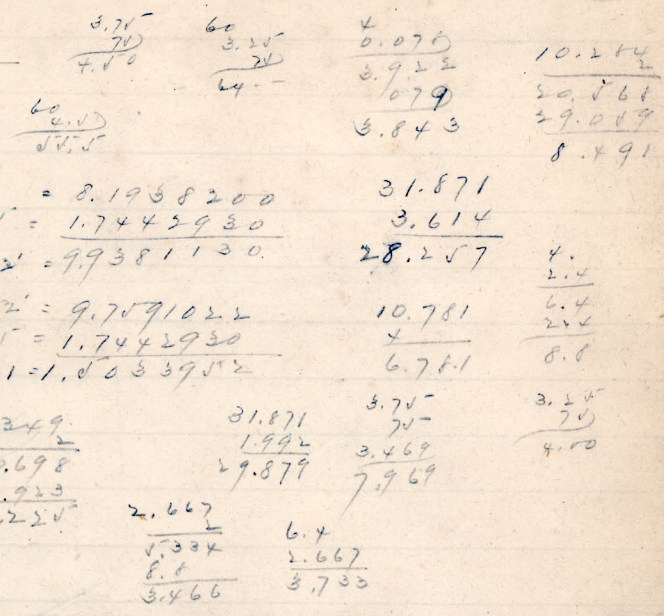
$$260.26.40$$

$$30.18.20$$

3/2 3/92







$$\begin{array}{r} 7.14152 \cdot 10^6 \\ \hline 2.6671 \\ \hline \end{array} \quad \begin{array}{r} - 9.4260277 \\ \hline - 0.4260377 \end{array}$$

8/23/92-

Separating Chamber at Passyunk Ave & Schuykill River ²⁹

$$\begin{aligned}
 S &= 9.0969100 \\
 1.5 &= 0.1760913 \\
 10^{\circ} 37' 11'' &= 9.2730013 \\
 \text{cs. } 10^{\circ} 37' 11'' &= 0.0075027 \\
 S &= 0.9030900
 \end{aligned}$$

$$\begin{aligned}
 8.1394 & 0.9105927 \\
 4.832 &= 9.3158731 \\
 S &= 0.3010300 \\
 22^{\circ} 29' 06'' &= 9.6169031
 \end{aligned}$$

$$\begin{aligned}
 \text{cs. } 22^{\circ} 29' 06'' &= 0.0343375 \\
 4.832 &= 0.6541269 \\
 5.2296 & 0.7184644 \\
 \text{cs. } 22^{\circ} 29' 06'' &= 9.9656624 \\
 4.069 &= 0.6094877 \\
 3.7197 & 0.5751502 \\
 5.22^{\circ} 29' 06'' & 9.6169031 \\
 1.5562 & 0.1920533
 \end{aligned}$$

$$\begin{aligned}
 18.129 \\
 21.017 \\
 \hline
 1.525
 \end{aligned}$$

$$\begin{aligned}
 1.139 \\
 16.278 \\
 1.521 \\
 \hline
 217.803 \\
 8.901 \\
 4.069 \\
 \hline
 4.832
 \end{aligned}$$

$$\begin{aligned}
 28.139 \\
 4.069 \\
 \hline
 \end{aligned}$$

Garfield St. Sewer

129.083

125.47

4.613

106.287 = 7.9735199

4.613 = 0.6639835

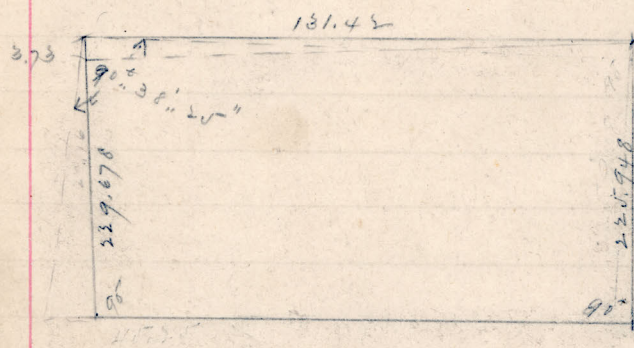
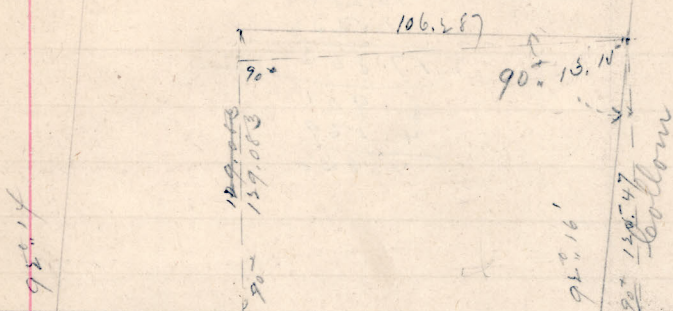
2° 29' 15" = 8.6375034

92.16

87.44

2° 29' 15"

90.13.15



229.678

225.948

3.730

131.42 = 7.8813385

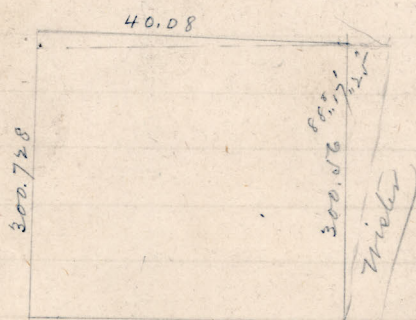
3.73 = 0.5717085

1° 37' 35" = 8.4530473

88° 21' 25"

2° 16'

90.38.25



300.728

300.728

.168

40.08 = 8.3970723

0.168 = 9.2253093

0° 14' 25" = 7.6223816

88° 03'

14.25"

88° 17' 25"

17° 47' 30"

90

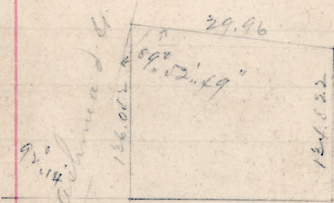
1.45.14

109.33.24

88° 14' 06"

1.57

90.11.06



136.052

124.132

1.230

29.96 = 8.5234082

1.23 = 0.0899051

2° 21' 11" = 8.6133633

95° 14'

2.21.11

89° 52' 49"

160

17° 47' 30"

7° 15' 30"

20

2° 12' 30"

17° 47' 30"

13.432

6.131

19.563

173.042

131.184

41.858

227.906

20.000

15.035

15.000

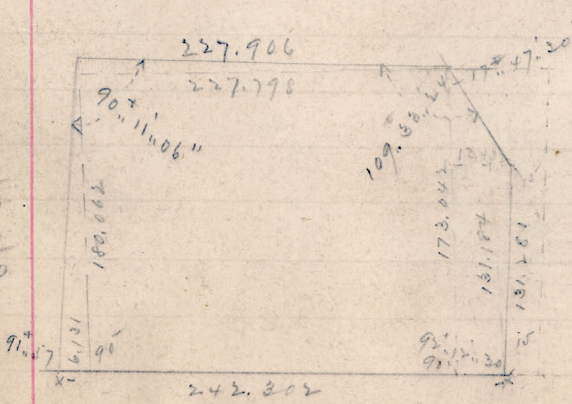
277.941

022

277.963

013

277.910



5.15.57 = 0.32405

180.06

180.06 = 20430

27240

3405

161310430

9.9996773

131.281

131.184

5.15.12.30 = 8.5861571

0.7040363

13.432

6.131

19.563

173.042

131.184

41.858

242.302

5.007

247.361

19.563

227.798

17° 47' 30" = 0.0212838

41.858 = 1.6217785

43.961 = 1.6430643

180.062

173.042

7.020

227.798 = 7.6424501

7.02 = 0.8463371

1° 45' 12" = 8.4887872

C. 1° 45' 14" = 0.0002061

227.798 = 2.3575499

227.906 = 2.3577560

5.17.47.30 = 9.5063707

41.858 = 1.6217785

13.432 = 1.1281542

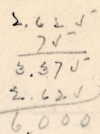
5.

217.132
173.042
390.174
390.001
217.294
172.707
19.008
191.715
7
184.715
575
184.137
116
184.253
40.024
5.892
45.916
10.407
35.309
173.062
1.093
174.155
305.679
131.524
20
15.022
4.498
131.524
475
132.002
1.082
131.918
31.179
30.231
61.410
184.253
122.843
108.714
281.557
47.305
328.912
217.574
546.486
47.22
593.706
70.981
664.687
48.019
712.706
30
742.706
134.043
876.749
45.25
8.108
36.444
876.749
80.130
956.879
125.51
1082.429
46.789
1129.218
34
1164.218
471.239
1211.457

$4.2^{\circ} 12' 30'' = 1.4138429$
 $6.373 = 0.9228811$
 $217.132 = 2.3367240$
 $217.294 = 0.0003227$
 $217.294 = 2.3370467$
 $5.89^{\circ} 33' 24'' = 0.0000130$
 $5.88^{\circ} 14' 06'' = 9.9997939$
 $390.174 = 2.0912583$
 $390.001 = 2.5910652$
 $5.89^{\circ} 33' 24'' = 0.0000130$
 $5.2^{\circ} 12' 30'' = 8.5858345$
 $390.174 = 2.5912583$
 $15.035 = 1.1771058$
 $Co. 1^{\circ} 07' = 0.0002516$
 $40 = 1.6020600$
 $40.024 = 1.6023116$
 $5.1^{\circ} 07' = 8.5320797$
 $40 = 1.6020600$
 $1.3619 = 0.1341397$
 $5.1^{\circ} 07' = 8.5320797$
 $305.679 = 2.4852652$
 $10.407 = 1.0173453$
 $5.1^{\circ} 07' = 8.5320797$
 $173.062 = 2.2382017$
 $5.8921 = 0.7702814$
 $Co. 0^{\circ} 14' 25'' = 9.9999762$
 $20 = 1.3010200$
 $20.000 = 1.3010262$
 $5.00^{\circ} 14' 25'' = 7.6228935$
 $.083872 = 8.9236497$
 $Co. 1^{\circ} 45' 04'' = 9.9997939$
 $15.029 = 1.1905838$
 $15.025 = 1.1903777$
 $5.1^{\circ} 45' 04'' = 8.4887895$
 $0.477688 = 9.6791372$
 $131.918 = 7.8796960$
 $4.491 = 0.6530195$
 $1^{\circ} 57' 10'' = 8.5357155$
 $Co. 1^{\circ} 57' 10'' = 0.0002523$
 $131.918 = 2.1203040$
 $131.995 = 2.1205563$
 $4.2^{\circ} 16' = 8.5783433$
 $222.03 = 2.3464117$
 $8.8055 = 0.9447550$
 $4.2^{\circ} 16' = 9.6768686$
 $153.6 = 2.1863912$
 $72.989 = 1.8632598$
 $1211.457 = 182.065$
 $110 = 57.1$
 $1321.457 = 131.065$
 $121.065 = 110$
 $1342.522 = 21.065$
 $39.159 = 1381.681$
 1381.681

Co. 0^{\circ} 14' 25'' = 9.9999961
113.89 = 2.0564856
113.89 = 2.0564817
5.10^{\circ} 14' 25'' = 7.6245972
47782 = 9.6810789
Co. 10^{\circ} 19' 00'' = 9.9999934
36.444 = 1.5616260
36.444 = 1.5616194
5.10^{\circ} 19' 00'' = 7.7424841
20142 = 9.3041035
Co. 0^{\circ} 19' 00'' = 9.9999924
222.03 = 2.3464117
222.03 = 2.3464051
5.00^{\circ} 19' 00'' = 7.7424841
1.2271 = 0.0888892
Co. 0^{\circ} 07' 25'' = 0.0000606
257.04 = 2.4099331
257.04 = 2.4099337
5.00^{\circ} 07' 25'' = 8.2228045
257.00 = 2.4099331
4.2927 = 0.6327376
5.42^{\circ} 46' 10'' = 0.1235242
5.89^{\circ} 02' 35'' = 9.9999394
80.03 = 1.9032908
106.35 = 2.0267544
5.42^{\circ} 46' 10'' = 0.1235242
5.40^{\circ} 14' 25'' = 9.8102288
80.037 = 1.9032908
68.714 = 1.8370438
Co. 1^{\circ} 18' 35'' = 0.0001135
257 = 2.4099331
257.067 = 2.4100466
5.1^{\circ} 18' 35'' = 8.3591322
257 = 2.4099331
5.8758 = 0.7690653
5.51^{\circ} 04' 10'' = 0.1090717
6.88^{\circ} 41' 25'' = 9.9998265
90.205 = 1.9052306
110.93 = 2.0641888
5.51^{\circ} 04' 10'' = 0.1090717
5.40^{\circ} 14' 25'' = 9.8102288
90.205 = 1.9052306
74.909 = 1.8745311
5.28^{\circ} 32' 05'' = 0.3208269
42.941 = 1.6328722
89.888 = 1.9536991
Co. 2^{\circ} 16' = 0.0003399
222.03 = 2.3464117
222.21 = 2.3467516
Co. 2^{\circ} 16' = 0.0003399
126.45 = 2.1088355
128.58 = 2.1091754

333.219
36.444
1.227
222.03
201
370.890321829
113.89
257.000
305.679
4.480
306.159
221.829
4.293
226.122
306.159
80.037
257.04
68.714
188.326
106.35
72.914
32.361
221.829
5.875
215.954
306.159
90.205
257.067
74.909
182.158
16
196.152
110.93
72.914
42.941
257.04
15.32.01
29.667
42.941
72.608
198.157
125.550
222.21
633
222.843
179
222.664
128.58
633
127.947
661
127.886
222.664
94.778
59.778
35.000



$$\begin{array}{r} 1.75 \\ \hline 1.875 \end{array}$$

20
3.235

16.785

$$\begin{array}{r} 5.053 \\ .75 \\ \hline 5.875 \\ 11.678 \\ 6.5 \\ \hline 5.178 \end{array}$$

$$\begin{array}{r} 6.0 \\ 3.089 \\ \hline 9.089 \\ 5.207 \\ \hline 4.382 \end{array}$$

$$\begin{array}{r} 6.188 \\ 5.207 \\ \underline{4.132} \\ 2 \overline{) 15.777} \\ 7.888 \\ \underline{6.188} \\ 1.700 \end{array}$$

$$\begin{array}{r} 7.888 \\ 4.382 \\ \hline 3.506 \\ 8084 \end{array}$$

$$\begin{array}{r} 8.922 \\ \hline 17.848 \end{array}$$

W M W.W.

Pall

W W W W M M M

Amasaka Creek Sewer 12/30/92

$$\frac{39/30.0}{273} (.77)$$

$$Q = \frac{CA}{1.48}$$

$$3 \times .77 \sqrt{\frac{30}{904}}$$

$$D = 2.25 \sqrt{\frac{5.4772}{30.0666}}$$

$$Q = 2.25 \times \frac{2.24}{5.48}$$

$$\begin{array}{r} .942 \\ 904 \\ \hline 3768 \\ 84780 \\ \hline 881.568 \end{array}$$

$$Q = 881.568$$

$$\sqrt{5.4772} = 2.34$$

$$\begin{array}{r} 43 \overline{) 147} \\ \underline{129} \\ 1872 \\ \underline{1856} \end{array}$$

$$\begin{array}{r} 2.34 \\ \underline{2.25} \\ 1170 \end{array}$$

$$\begin{array}{r} 1170 \\ 468 \\ \hline 468 \end{array}$$

$$\begin{array}{r} 2.48 \overline{) 5.2650} \\ \underline{5032} \\ 2330 \\ \underline{2192} \\ 1380 \end{array} \quad | .942$$

$$\sqrt{30.0666} = 5.48$$

$$\begin{array}{r} 25 \\ 104 \overline{) 506} \\ \underline{416} \\ 9066 \end{array}$$

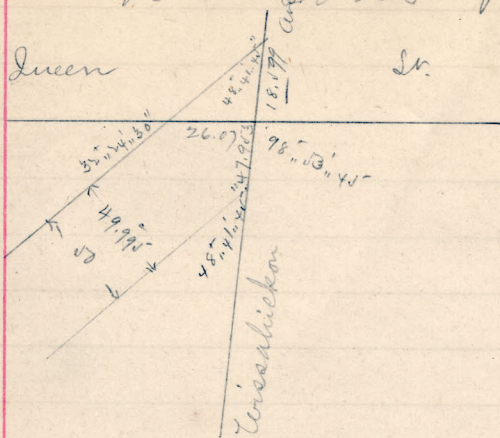
$$8'9" \text{ sewer } \cdot 0.77 \text{ grade} = 14.7 \text{ velocity}$$

$$\text{area of } 8'9" \text{ sewer} = 60.132$$

$$\begin{array}{r} 14.7 \\ 420924 \\ \hline 240528 \\ \hline 60132 \end{array}$$

$$8'9" \text{ sewer capacity with } 0.77 \text{ ft } 100 \text{ grade} = \underline{883.9404} \text{ cfs.}$$

Dobson's Run Survey January 17/93



$$\begin{array}{r} 32.41.30 \\ 48.41.45 \\ \hline 81.06.15 \end{array}$$

$$\begin{array}{r} 47.953 \\ 18.599 \\ \hline 66.552 \end{array}$$

$$S. 48^{\circ} 41' 45'' = 0.1242350$$

$$6.32.41.30 = 9.7291239$$

$$26.07 = 1.4161410$$

$$\frac{18.599}{1.4161410} = 1.2694999$$

$$S. 48^{\circ} 41' 45'' = 9.8757650$$

$$66.552 = 1.8231611$$

$$\frac{49.995}{1.8231611} = 1.6989261$$

Wolf St. Sewer January 2nd 1893

EFG

HIJ

KL

54.24
02.60
57.64
40000
50656000
174240
323200
304920
182800

55.29
04.00
51.29
205160000

24.50
04.50
20
40000
43560/500000 (19
43560
364400
R L
11

19.-
46
67
40
63
170
218
82
337
17
394

46.21
02.79
43.42

47.96
04.41
43.55
40000
17420000 (40
174240
435200

76.72
20.10
46.62
22125
26787
20000
67.87 43560/

69.27
01.74
67.53
67.87 40000
27148000 (63
261360
101200

R L

6000

3043
22125
25168
6000
19168
10000
9168

58.87
02.89
55.98
34.73
90.71

36.69
01.96
34.73

91.68
40000
43560/36672000 (84
345480
182400
174240
8160

9100

5905
22125
28030
9150
18930
10000
89.30

58.85
00.67
49.38
39.90
89.28

40.00
00.50
39.90
43560

89.30
40000
43560/35720000 (82
345480
87200

R L

9073

3119
22125
25244
9073
16171
10000
61.71

63.65
02.15
61.50

61.71
40000
43560/2680000 (15
217800
290000

$$Q = \frac{v \sqrt{a}}{a} = 3 \times 7.5 \sqrt{\frac{2}{394}} = 2.25 \sqrt{\frac{1.4142}{19.8494}} = 2.25 \times \frac{1.189}{4.455} = 2.25 \times .267 =$$

4.455/1.18900 (2.67 2.25
8910 .267
29800 1575
52730 1350
307000 450
60.075 5364
236.794

$$\sqrt{0.07} = 0.015 \sqrt{2 \times 0.7} = 0.015 \times 1.14 = 0.015 \times .374$$

7' line Ave 36.485 36.485

T. grad. 0.444 x 100 = 36. 115.455

7'3" sewer 41.212 41.212
123.846
247

7'6" Twin Sewer for outlet

9'6" = 70.88
31
35400
21264
248080

9'3" = 67.4
31
3840
2016
23850
67.4
3360
2016
25520

$$Q = \frac{\sqrt{C}}{a} = 2 \times 75 \sqrt{\frac{2}{337}} = 2.25 \sqrt{\frac{1.4142}{18.3576}} = 2.25 \times \frac{1.189}{4.281} = 2.25 \times .277 = .6233$$

$$\begin{array}{r} 4.281 \overline{) 1.1890} \quad .277 \\ \underline{8570} \\ 33200 \\ \underline{39995} \\ 3205 \end{array} \quad \begin{array}{r} 2.25 \\ \underline{.277} \\ 1575 \\ \underline{1575} \\ 450 \\ \underline{65325} \end{array} \quad \begin{array}{r} .6233 \\ \underline{337} \\ 43631 \\ \underline{18699} \\ 10699 \\ \underline{2100521} \end{array}$$

7'6" sewer $\frac{110.4}{230.8}$ ← 7'3" sewer from Front St to Wisconsin Ave

$$Q = \frac{\sqrt{C}}{a} = 2 \times 75 \sqrt{\frac{2}{250}} = 2.25 \sqrt{\frac{1.4142}{15.7667}} = 2.25 \times \frac{1.189}{3.996} = 2.25 \times 0.3 = .675$$

$$\begin{array}{r} 3.996 \overline{) 1.1890} \quad .3 \\ \underline{11988} \\ 17890 \\ \underline{7156} \\ 89450 \end{array} \quad \begin{array}{r} 2.25 \\ \underline{.675} \\ 675 \\ \underline{3375} \\ 3375 \\ \underline{1350} \\ 172425 \end{array} \quad \begin{array}{r} .675 \\ \underline{3996} \\ 63023 \\ \underline{18906} \end{array}$$

6'4" = $\frac{35.76}{25}$ 7'0" sewer from Front St to 10th St

$$Q = \frac{\sqrt{C}}{a} = 2 \times 75 \sqrt{\frac{2}{170}} = 2.25 \sqrt{\frac{1.4142}{13.0354}} = 2.25 \times \frac{1.189}{3.618} = 2.25 \times .328 = .738$$

$$\begin{array}{r} 3.618 \overline{) 1.1890} \quad .328 \\ \underline{10854} \\ 10360 \\ \underline{7236} \\ 31240 \end{array} \quad \begin{array}{r} .738 \\ \underline{170} \\ 51660 \\ \underline{738} \\ 125460 \end{array}$$

$$7'6" \text{ sewer} = \frac{44.179}{132.537}$$

6' sewer 10th St west

7'9" sewer for 6th to 10th St.

See Book # 2
Page 27

Page 43 to end

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Pages moldy &
discarded